UNIVERSITY OF LONDON

UNIVERSITY COLLEGE ANNUAL REPORT 1972-1973

UNIVERSITY COLLEGE
LONDON

Digitized by the Internet Archive
in 2025 with funding from
UCL Library Special Collections

https://archive.org/details/ucl-annual-report-1973

CORRECTION

Owing to a printer's error the second line on the Contents page was printed wrongly. It should read:

The Report for 1972–73 (with Supplement) 23

CONTENTS

Foreword by the Provost 5

The Report for 1971–72 (with Supplement) 23

Publications by Members of College Departments:

Faculty of Arts 44

Faculty of Laws 57

Faculty of Science 59

Faculty of Engineering 86

Faculty of Medical Sciences 93

Faculty of Environmental Studies 105

Computer Centre 106

The Library 107

Health Centre 107

Appendices:

I College Committee 108

II Professorial Board 109

III Honorary Fellow and Fellows 115

IV Principal Changes in the Academic Staff 116

V Public Lectures 121

VI Numbers of Students 124

VII Geographical Distribution of Students 125

VIII Admission of First Degree and First Diploma Students 126

IX University First Degree and Diploma Awards .. 128

X University Higher Degree and Higher Diploma Awards 131

XI College Diploma and Certificate Awards 135

XII Scholarships, Studentships, and Prizes: College and University Awards 138

XIII Benefactions, Donations, Research Grants and Contracts 143

XIV College Accounts 160

OFFICERS OF THE COLLEGE

CHAIRMAN OF THE COLLEGE COMMITTEE

SIR BERNARD WALEY-COHEN, BT, LL.D., M.A.

VICE-CHAIRMAN OF THE COLLEGE COMMITTEE

SIR EDWARD PLAYFAIR, K.C.B.

TREASURER

SIR JOHN STEVENS

K.C.M.G., O.B.E., D.S.O., T.D.

PROVOST

THE RIGHT HON. LORD ANNAN

O.B.E., M.A., D.LITT., D.U.

VICE-PROVOST

PROFESSOR SIR HARRIE MASSEY

D.SC., PH.D., LL.D., F.R.S.

SECRETARY

A. TATTERSALL, M.A.

FOREWORD BY THE PROVOST

THE NUMBERS GAME

As the year 1973 ends universities will be facing a financial setback the like of which has not been paralleled for over thirty years. The massive cuts imposed on the Department of Education and Science in December are certain to fall particularly heavily on higher education. When the cuts were announced, it was assumed that as usual the building programme would bear most of the honourable scars and that, hard as it might be, long awaited plans would be postponed for a few years. Clearly, too, the stoppage in the building programme would decrease the expansion of student numbers—students cannot be admitted to work in non-existent buildings. But there are signs that the situation could be far graver.

There is one simple reason why the knives will be out in the Department of Education and Science for higher education. It is a sector whose plans for increased recurrent expenditure can be cut. Children in schools have to attend school and cuts there are more difficult. But higher education is not obligatory and therefore difficult to defend. What chance has the University Grants Committee of fighting a successful defensive battle?

Are There More University Students Available?

The omens are unfavourable. To begin with the universities have themselves been indulging in a lot of speculation as to whether the additional students actually exist, and the reports of the Universities Central Council on Admissions have been seized on as evidence that they do not. This does not make the task of the Chairman of the UGC any easier as he buckles on his armour. If the universities are really half-hearted about expansion, then they must expect to take far more than their share of the cuts.

Yet it must be admitted that the problem is not all that easy. All universities have been playing the Numbers Game. This consists of guessing whether they will hit their UGC target for student numbers by the end of this quinquennium. Universities will have to get near these targets if they are to stand a chance collectively of reaching in 1981, at the end of the next quinquennium, their share (which is half) of the total of 750,000 full-time students which the White Paper forecasts should then be receiving higher education. What are the odds? And what are the odds on University College reaching its target?

If the returns from UCCA this year were to be treated as reliable material for prediction, the universities would signally fail to meet their targets this quinquennium. They are already nearly 2 per cent below their target for 1972–73, and if this trend continues unchecked they would be over 17 per cent below it by the end of this quinquennium. But will the trend continue? It should certainly not continue at this rate. The crucial year is 1974–75 for which at this moment applications are being received. That is the year in which a new birth-rate bulge will begin to move from the schools into the universities. The UGC target figures show that universities would have to admit more than 10,000 more undergraduate entrants in October 1974 than they did in October 1972. Yet UCCA returns show that the pool of applicants is not increasing and the surplus of demand over the supply of places is diminishing.

It is anybody's guess whether the global figures of the educational planners will be translated into the corporeal presence of undergraduates. On the demographic evidence it should be possible. But figures so often do not work out as they should. Why is this?

One reason is that the UGC works on the capacity of buildings to give them their student targets. But if insufficient science students are available, the empty space in laboratories and science buildings cannot be converted by the wave of a wand into rooms for lecturers and students in the humanities. Sixth-formers show a deplorable tendency to make up their own minds what to study. They respond immediately to mysterious twangings on the student net-work, but planners cannot respond so quickly. It takes ten years to translate a plan into buildings. Students respond exceptionally quickly to the job market. Their failure to apply to study physics and chemistry—and this year chemical engineering—reflects trends in the United States as well as in industry at home. On the other hand, they do not necessarily respond to what at different times is thought by planners to be the national need. They throng departments of English and Archaeology, and various kinds of social science. They queue for places which universities are forbidden to provide: the number of applicants for medical schools far exceeds the supply of doctors which the Department of Health and Social Security (working on the usual phoney manpower estimates) have been able to persuade the Treasury to finance. Universities provide staff for an over-subscribed department and find a decade later that it has empty places. Alluring courses which appear to offer job opportunities are devised by new universities, who then find that there are only a handful of takers.

The pattern of our intake is curious. Science intake as a whole is 20 per cent below capacity, although seven departments did have their full intake. Applicants are like hail in summer, they melt in an instant. One scientific department had only 12 applicants for 10 places, took 2 and picked up a further 2 from the clearing house. For mathematics there were 249 applicants: 4 out of 5 who applied were offered a place, although the department expected that no more than 50 students would in the end come. By some miracle, out of the 109 who accepted, 50 came. We have as much difficulty in attracting candidates in physics, chemistry, and, astonishingly enough, in computer science and statistics, as we have success in psychology, biochemistry, anthropology, and astronomy. Engineering is almost as hard-hit as science and is 15 per cent below capacity. Law, environmental studies, English, geography, and our Latin-American courses are buoyant.

Student demand is volatile. University supply—the teachers in universities and the subjects they offer to teach—is the reverse. The system of tenure makes it exceptionally rigid. The pattern of what a university is, and will be for the next thirty years, is and will be set hard so long as academic staff obtain tenure three years after appointment in their twenties and retain it until a retiring age in their sixties. The question which is troubling University College is whether what we supply—and supply at an exceedingly high level—is going to continue to be demanded.

Our courses were well adapted to the needs of the top four per cent who at the beginning of the sixties emerged from secondary education and went into the universities. They were specialist courses intimately connected with the research which the teachers were doing. After the Robbins Report many changes were made: science went on to a course unit system; joint honours courses emerged in the humanities; but it was not thought wise to copy the broad courses and vocational studies of the new institutions. In the humanities today we could obtain greater flexibility; but it is not always those departments which offer the greatest number of options where the students are most contented and have the greatest sense of purpose. Innovation, moreover, depends on resources. For instance the Faculty of Arts, rightly judging that certain well-subscribed departments are already large enough, are now discussing whether to create at least one new department in the general field of politics, government or public policy, an area hitherto left, in central London, to the London School of Economics.

Student Grants

Whether the students are there depends on whether sixth-formers will want to come to universities; and that depends in part on the level of student grants at present being negotiated for the next triennium between the Department of Education and Science and the National Union of Students. Ever since the Anderson Committee reported, it has been Government policy to cover the reasonable basic maintenance costs of undergraduate students, subject to a means test. But from the days of the 1967 devaluation, Governments have fixed grants which fall short of basic living costs. At the end of 1973 the basic grant was £100 lower than it should have been.

We are now facing the probability that the Anderson principle will be abandoned. It will be abandoned because no Government will be willing to afford student maintenance at the level of the nineteen-sixties. But there are other reasons for the abandonment of the Anderson principle. The interests of the three parties concerned in the award diverge. The Government, the Vice-Chancellors Committee, and the NUS have different objectives.

The NUS do not put the level of the basic grant as their first priority, nor is the plight of the universities in the forefront of their mind. They are rightly concerned with students in the whole of higher education, and the objective nearest their heart is probably to get discretionary awards made mandatory throughout higher education so that the art student, no less than the university student, can claim as of right a grant from his Local Authority if he has got a place in a college. The NUS want to abolish the parental means test, or at least to raise substantially the level at which it begins to operate, and are arguing that the cost of doing so could be offset by removing tax advantages such as children's allowance. Equal grants for wives, higher grants for study abroad (eroded by devaluation), and other fringe benefits may well precede in their minds the level of the basic maintenance grant—though, of course, they will press for that to be raised too.

The Vice-Chancellors are sincere in backing unreservedly the NUS campaign for fair grants. But Vice-Chancellors give top priority to getting an adequate basic grant so that students can study in vacations, pay the modest price of refectory meals, the going rate of rents in lodgings, and (more important for the universities) of rents in halls of residence and student houses. Most universities have built student residence blocks with loan finance and have installed refectories which require skilled staff despite cafeteria

service. These must either be able to operate at economical prices or be subsidised through special UGC grants.

The third party to the award, the Government, has yet a different objective. That is to set a limit to the total cost. All smiles, Government deprecatingly holds out a bag of gold. 'We can afford only so much—what would you like to spend it on?' Last triennium the student leaders went for the fringe benefits. Universities then faced demands openly to subsidise refectory prices and rents. Although University College students had no truck with rent strikes, other universities were hit by them.

If student grants are inadequate and students cannot pay rent or normal meal costs, what can universities do? They cannot provide wide-ranging subsidies from funds voted by Parliament for teaching and research in order to keep down rents and food costs. They have on their hands a conflict which they have not created and are powerless to resolve. The universities, excluded from the all-important first two stages of the negotiations between the DES and the NUS, must press that student grants should be supplemented annually to take account of changing prices. They must press that their refectories should be treated at least as generously as those in hospitals and other public concerns when various accounting procedures, such as the write-off of equipment, come under review. University refectories are still governed by regulations to ensure that the food and drink of dons and students are not subsidised: and these regulations came into being at a time when it seemed crucial to prevent the Fellows of St Aloysius from squandering their endowments by dining off oysters and champagne six nights a week. No oyster has been seen at University College for many years; and the only delicacies provided from College funds are the squids used by the neurobiologists in their research.

But if the Anderson principle is to all intents and purposes abandoned, then the universities will have to tell students, 'If you come here, you must accept that you will have to earn part of your maintenance by taking a job in the holidays'. Once again one can see Government barely concealing a smile. They know that most students take jobs to earn money for holidays abroad. Why not take account of these earnings? The trouble is that not all students can so earn—particularly some girls. British universities have been more successful than some continental countries in getting working-class students to apply for places. They will be discouraged from applying if grants are inadequate: those whose parents earn well and are caught by the means test already are. So indeed will be the

middle-class student, whose parents cannot afford to support in full two children at university. Higher education must inevitably be meritocratic but it has been a virtue of British higher education to open the door not only to those who could show their talents to full advantage at eighteen but to some whose talents were as yet not fully developed. That was the intention behind the Anderson principle, and that is what is at stake.

Not that the N U S appears to realise what is at stake. They seem to be living in a world clouded with rhetoric in which they imagine that they have the same coercive power as the National Union of Mineworkers. In the middle of negotiating the grant with the D E S they have called for rent strikes. They are presenting demands which if fully implemented might total anything up to £250m. a year. If the demands are not met, like King Lear, they will do such things, what they are yet they know not, but they will be the terror of the earth. This is not, perhaps, the most effective way, at a time of national crisis, to persuade the Secretary of State not to make higher education take the full brunt of the cuts.

Will the Quinquennial Settlement be Wrecked?

As I write, no one knows how far the Quinquennial Settlement, like other plans based on the assumption of a steady growth in the national economy, will become not worth the paper it is written on. The D E S must inevitably be tempted to say: 'The Universities appear to doubt whether they can find the students for which they were offered funds, and in any case students have become too expensive to finance on full grants. So why add to our difficulties by increasing their numbers?'

It is not as if the Quinquennial Settlement has been all that lavish.

The University of London (excluding Imperial College) was notified in January that its grant for the quinquennium would amount to £51 million rising to £61 million, though it was not until June that we learnt that our share was £6·8m. rising to £7·4m. In October we learnt what our share of supplementary grants, based on mid-1973–74 price levels, would be—and received a nasty shock. It could be that the U G C calculations have been related to the grants for 1971–72, with the result that this latest supplementary grant takes no recognition of increased U G C grants for 1972–73. We are, however, unable to reconcile this theory with the supplementary grant awarded to Imperial College, which seems to tie in quite closely with their 1972–73 grant. In making these comments

it must, of course, be admitted that, as so often, it is impossible to make firm deductions. The sheer size of the University, the disparity between its Schools and Institutes, and the missing pieces in the jigsaw defy augury: but the Court Department, as always helpful and friendly, are investigating our suspicions that the University may have been unwittingly short-changed.

The Quinquennial Settlement is explicitly tied to the need to increase student numbers. Whatever development money we have available must therefore be directed to those departments which are able to increase their numbers, so that the College can get as near as possible to the figure in 1977 proposed by the UGC. But a high proportion of the UGC's grant has gone in two other directions. A large proportion of the development money has been allocated to the medical schools, to make up deficiencies identified in the Todd Report, in accordance with the University's own submission to the UGC.

The other area which absorbs a high proportion of London's grant is general administrative costs. Administrative costs in London run at 8 per cent of expenditure—only one per cent above the national average for United Kingdom universities. But if one looks at these same administrative costs in terms of cost per student, they are far higher than in other universities. At U.K. universities they average £95 per student. The costs at a London School are 25 per cent higher and, when Senate House costs are added, 50 per cent higher. Of course London's high costs are caused by the fact that so many of its units are small; by the inclusion of London allowance; by the External Degree; and by the multifarious activities which inevitably fall on the university of the nation's capital city. But by far the greatest proportion of any university's costs are staff salaries and wages. The higher proportion of senior staff, the better staff-student ratios and the numbers of technicians should not cost proportionately so much more in administrative support. This imbalance in expenditure on administration is not the 'fault' of the Senate House: but it is in part the fault of the Statutes of the University and the governmental system which they enshrine and which it was the job of the Murray Committee to reform: but of that, more later.

What do we do with it?

Still, a UGC grant of £7·5m. a year is a lot of money. About a century ago at the time of Queen Victoria's deepest seclusion in widowhood a scurrilous pamphlet appeared on the subject of her

grant from the Civil List. It was entitled 'What does she do with it?' Critics may well ask what we do with our grant. We may argue correctly that practically all of it is committed in salaries and wages, in maintenance of buildings, and in all sorts of inescapable commitments before a penny can be allocated to do something new—or, rather, to do what we have been bidden by the U G C, namely to increase student numbers to 5,715: when it comes to the point we shall be lucky if we can devote more than £300,000 over the quinquennium to that purpose. But what is the product of all this money? Well, to begin with, we teach (maybe we over-teach) 5,000 students, most of whom in the end achieve respectable degrees. We produce engineers and lawyers, and help to produce doctors—a hundred or so of each a year. We produce architects and planners. We produce people with arts and science degrees who may or may not use professionally what they have learnt here, but in most cases bring to their subsequent work habits of critical thought and judgment which they have seen practised in lecture rooms and laboratories. We think we look after our students reasonably well while they are here—we provide tutors, a counsellor, careers advice, a health service, and an opportunity to learn to live and work independently outside the classroom. We provide a surprising amount of living accommodation at surprisingly cheap rates, and we feed our students and staff reasonably well and, by comparison with other universities, economically.

We do a very great deal of research—indeed we prefer to live uncomfortably in over-crowded common rooms because we are willing to take in considerable numbers of research assistants and ancillary staff on research contracts from Government, industry, the research councils and foundations. Much of it consists in discovering new knowledge, as in our Physics Department; and our historians and literary critics contribute to the cultivation of a climate of civilised opinion by which contemporary events and behaviour can be judged. Some of the fundamental research in our Faculty of Medical Sciences has direct bearing on drug dependence, on allergies, on muscle behaviour, on the operation of the central nervous system and the various sensory mechanisms, on chemical carcinogens, and on metabolic problems. It would be perfectly natural for those who know how austere and rarefied are some of the studies at University College to believe that it is indeed, as it was described by an eminent sociologist during the proceedings of the Commonwealth Universities Congress at Edinburgh this summer, in terms which were meant to be a glowing tribute to

our tradition of dispassionate enquiry, 'the last example of the nineteenth-century German university at its finest'. We are, in fact, not sunk so far in the past as that; and in these days when relevance in research is demanded by those who like to compare the polytechnics with the universities, to the disadvantage of the latter, the following examples of the kind of research we do may be interesting:

ANTHROPOLOGY: prejudice and tolerance in Ulster; urbanisation problems.

ENGLISH: modern English usage.

GEOGRAPHY: urban climates; contemporary office location policy; human problems in multi-storey housing.

PHONETICS: the teaching of intonation and rhythm to deaf children by visual means.

POLITICAL ECONOMY: problems of economic growth, trade and liquidity in developing countries.

BOTANY, GEOGRAPHY, ZOOLOGY, CIVIL ENGINEERING, ENVIRONMENTAL STUDIES: conservation of the natural environment (an M.Sc. course and much associated research).

PSYCHOLOGY: the psychology of the handicapped child; cognitive processes and educational attainments of socially-handicapped children; recruitment and training of sewing machinists; training of bus drivers and of older adults as guards on the underground; problems in the design of bank notes.

ZOOLOGY: ageing in man; tumour immunology.

CHEMICAL ENGINEERING: production of enzymes for industrial use.

CIVIL AND MUNICIPAL ENGINEERING: traffic intensity in urban areas; pedestrian safety; urban transport needs; problems of public health.

MECHANICAL ENGINEERING: training blind people in the use of a sound detection device; development and control of an artificial arm; ship construction and behaviour.

ENVIRONMENTAL STUDIES: problems facing young families in acquiring their own home; studies in the heating, lighting and ventilation of buildings; the effect of noise on people; physical planning and social conflict.

Little of this could be done without help from the grant-giving

bodies, public and private. In the first year of the quinquennium they gave us £1,618,000. The generosity is splendid; so is their trust in our worth. But support on this scale brings its own problems. All these grants have to be administered and accounted for separately by our Accounts Department. Almost every grant involves one or more staff appointments, at academic, technical or other support level. These workers have to be found, appointed, paid and accommodated. Most are on short-term contracts. Many of them require work permits, and the procedure for getting these is much more complicated and protracted since our entry into Europe. (It is no longer easy to employ a Commonwealth citizen.) Our Personnel Department's work is doubled by outside grant appointments. One of the reasons why we shall have problems in accommodating the 700 extra students for which the UGC believe we now have space, is that we are providing accommodation for the many research projects attracted to the College by the distinction of our scientific departments.

The question of space is becoming pressing. By the end of the quinquennium we shall have to find rooms for some thirty to forty new members of academic and administrative staff. Where are they to teach and work? The Dean of the Faculty of Arts makes nightly forays inspecting broom-cupboards and other obscure nooks to see if they could be converted into a room for a lecturer, but there is a limit even to his ingenuity. There will have to be some reallocation of space in the near future.

We must allocate our development money in a way which, because it is seen to be equitable, commands general support. The intricacies of calculating student load and unit costs are made more labyrinthine by the fact that almost every department claims to be so idiosyncratic as to render comparison with any other department invalid. This is comprehensible when so many departments have so much outside financial support. The process of estimating comparative departmental costs provides an admirable example of the difficulty in a multi-faculty institution of working to UGC norms. The UGC relies to-day on a system of unit-costs, i.e. the cost per student in various subject-groups. Taking the 1971–72 cost per student as 100 we are expected to work in 1976–77 to a unit cost of 98; though there is (under the 98-umbrella) a variation from 102 in Medicine, through 99 in Arts, to 95 in Physical and Biological Sciences. Some complicated arithmetic is going to be needed for the distribution of the grant on this broad principle, in a situation where the existing cost per student ranges from £350

to £900 in the humanities departments and from £880 to £3,000 in the science and engineering departments.

The Murray Report

Few things do the universities more harm than when they give the impression that they are powerless themselves to rectify some of their troubles and that they expect all of them to be cured by injections of more money. The University of London had this in mind when they asked the UGC to join with them in setting up a committee to look into the whole complex problem of the governance of the University of London.

During the last year various potions, most of them poisonous, have been administered to the child called the Murray Report, which was brought into this world in an attempt to solve the academic and administrative problems of the University. Now that it is dead (although prayers are still offered up piously in the Senate House for the calm repose of its soul) we may at last admit that the Murray Report was a calamity. It was drafted on the assumption that the University was academically sick, whereas its teaching and research have never been more full of vitality and health. On the other hand it failed to diagnose that London's disease is administrative elephantiasis, which gravely affected the supply of blood in the allocation of financial resources. For instance, it failed to allude to the point made above concerning the need to reduce London's administrative costs: on the contrary it recommended that a further quarter of a million pounds should be spent in adding to those costs. Instead of recommending the removal of constraints it thought more should be added. It tried to put the clock back and once again attempt to impose a unitary form of government on what is essentially a loose federation, and forgot that the Hilton Young Report was accepted after the first world war precisely because it understood that there were limits to academic centralisation.

The Murray Report is a classic example of what can happen when the notion of participation is misunderstood. Participation in Schools is a reality: participation in the federal University in the form of an assembly or of boards on which academic staff express opinions and convey them in the most forcible terms to those who allocate resources could also be a reality. But in an institution of the size and complexity of London to-day, it is as grotesque to expect central academic concourses of hundreds of staff and students to *govern*, as it would be to conceive of the UGC's having

to submit for approval its allocation of funds for over fifty university institutions to bodies or 'Senates' composed of representatives of all these institutions and all the faculties within them together with a posse of eminent laymen.

If the federal University is to have a future, it must be as a central body allocating resources and encouraging co-operation between Schools, and not as a body attempting to exercise detailed academic control. Schools alone can determine how space and staff are to be deployed within the budget which the University gives them. Like the UGC, the University should allow budgetary implications to sink in upon the consciousness of its constituent bodies and not attempt, any more than the UGC does, to run the day to day affairs of its client institutions, whose job it is to judge how best to use the resources which the University has granted them.

But there is a corollary to this which is not always appreciated. In the first half of this century the most important function of central university administration was thought to be the workings of the Registrar's department—the promulgation of the exact academic and financial conditions for entry to the university and for equivalences and standards, and in consequence the exact conditions in time and standards needed to proceed to all degrees—so that all university degrees were precisely equivalent. By these means standards were set and maintained.

Today this has all changed. The numbers of examining bodies for entry to universities, if we count those overseas, have vastly increased. So have the subjects they offer to candidates. As the number of universities has doubled and the courses they offer multiplied, the old conception of every university degree course being interchangeable, with its counterpart elsewhere, because essentially similar has become obsolete.

Yet a sizeable part of the machinery of the Senate House and indeed in most Schools, is concerned with these matters. One of the most efficient central services maintained by the Senate House is the University Entrance Requirements Department which checks all the A- and O-level results of would-be entrants to the Schools of the University. For three years the University has been debating whether savings could be effected in this work; and it has been estimated that if certain reforms were made £20,000 could be saved annually. But the Registrars of Schools maintain that if these changes were made, all that would have been achieved would be to throw an additional financial and administrative burden on Schools,

who would perform the task at greater expense and less efficiently than the admirable service provided by the Senate House.

The solution to this problem and to many others does not lie in passing existing duties from the Senate House to Schools or from Schools to the Senate House. It is to ask how many of the duties in their present form are any longer necessary. Many are out of date. Many could be simplified. The universities of the seventies no longer place such importance as was done fifty years ago on exact equivalences in pre-university standards. The multiplication of options, and the presence of sizeable numbers of overseas students make it impossible. Fifty years ago the pivot of university administration was the collection of fees, the registration of students, and the equivalence of examinations. Today the committees which deal with the allocation of resources hold the centre of the stage. But if they are to be strengthened, Schools will have to accept that it is no longer possible to pay the administrative costs imposed by the educational philosophies and procedures of the first half of the twentieth century.

This was the problem, in effect, which the Murray Committee was asked to solve. It failed to do so because it did not consider in depth the managerial problems of the University or the question how participation by academic staff and students relates to executive action.

Nor did the Report, despite protestations, show an understanding of how a federal system works. As a result, after a year of discussion, beside which the Infernal Debate in *Paradise Lost* pales into insignificance, the Report, after a service of commination, has been buried. But like members of other commissions of enquiry whose 'solutions' were rejected, the signatories of the Murray Report can comfort themselves with the thought that they have provoked the kind of discussion which now enables everyone to be much clearer about what is desirable and what is practicable. Three years later the University is now setting about the task which it identified as being essential four years ago.

The College Development Plan

In last year's report I recorded that the UGC had offered us £7·5m., at 1971–72 prices, in buildings, furniture and fees, if we would accommodate the Royal Free Hospital School of Medicine pre-clinical departments on our rectangle as part of the fulfilment of the Todd/UCRF scheme, as it is now known. This £7·5m. would pay for the new medical building and help to replace or

modernise a good deal of obsolete accommodation, some of which would disappear to make way for the new Medical building. Some members of staff believed the proposition to be a Trojan Horse, and at once began to inspect its mouth. The majority, however, concluded that we should accept the offer, even if it was not exactly a gift horse and even if, in these days of norms and cost limits, a vale of tears, unfulfillable contracts, and endless frustrations lay ahead. For at the moment University College and Queen Mary College are the only Schools with workable plans for amalgamating with Medical Schools, and therefore have a substantial building scheme. Every other major School has been told by the UGC that no new sites are available and that London building costs preclude any large-scale development. While London faces zero growth sooner than any other university, University College has the chance to continue to extend and improve its premises.

The College commissioned Mr Anthony Cox, of Architects' Co-Partnership, to prepare a feasibility study. This was done and accepted in principle by the beginning of 1973. It is an exceedingly complex plan, though the essence is simple enough. The site to the south of the Central Collegiate Building is to be filled by a building, 'The Gordon Street Wing', which will house among other things the D. M. S. Watson Library (which will at last be re-united with the main Library), Egyptology, and an extension to the Students' Union. The building which at present houses the D. M. S. Watson Library and Egyptology will be demolished to provide the space for a new Medical Sciences building. Most of Foster Court (excluding Zoology) is to be demolished and replaced by modern buildings.

None of this could be done unless there was a subsidiary plan for decanting departments and units. The Gordon Street Wing site is cluttered with huts: their occupants and others will go, in some cases temporarily, to the Bartlett Building, with the school of Architecture meanwhile moving into the new building, called Wates House, now rising on the other side of Gordon Street. The Departments of Geography and Psychology are bound for Bedford Way, where they will inhabit temporarily a building which the University is about to erect. In the end we hope that all the huts and temporary buildings which ruin the appearance of the College will disappear. But although elaborate time-tables have been devised and at the moment all is going to schedule, we may well find that the plan will be appreciably affected by cuts in public expenditure.

The planning of this operation, involving the assessment of the

space requirements of every department and activity concerned, the decisions on who goes where, and the timing of the various moves, has been put in the hands of a small but representative committee, whose job is in the end to brief the architect. Its chairman is Professor H. Billett, who became Vice-Provost in October 1973. We already owe him a tremendous debt for the patience, clear-sightedness, and tenacity which he has shown in tackling this monumental task. We are fortunate in this, and in two other respects. One is that Mr C. C. Moore, Secretary of the Royal Free Hospital School of Medicine, has joined our staff to take on the administrative work in connection with the whole scheme; and our new Bursar, Mr E. Williamson, has come to us at the right moment with vast experience of the planning of university buildings, both within universities and with the UGC.

This group, together with the members of the Briefing Committee, and others, has now a substantial record of progress to its credit. A time-table covering the planning and the execution of the various elements in the whole scheme has been worked out. The space needs of most of the departments affected have been ascertained and collated. Project committees have been set up for Bedford Way, the Bartlett conversion, the Gordon Street Wing, and the Medical Sciences project and have begun work. Mr H. Faulkner-Brown, of Messrs Faulkner-Brown, Hendy, Watkinson, Stonor, has been appointed as architect to design the Gordon Street Wing: he is well-known for his work on libraries.

This year has brought to a close Professor Sir Harrie Massey's term as Vice-Provost, a post he filled as ever with distinction and to the great benefit of the College, particularly in regard to the delicate and complicated negotiations leading to the integration of part of the staff of the University's Institute of Computer Science with the College. The office of Vice-Provost is becoming an established part of the scene, and this year we have appointed a second Vice-Provost, Professor S. P. Datta, who has been for some years Dean of the Faculty of Medical Sciences. He becomes Chairman of the Joint Committee for co-ordinating, and eventually integrating, the Royal Free Hospital School of Medicine and University College Hospital Medical School with the College. When the new Medical building is completed, the pre-clinical part of RFHSM will move from its premises in Hunter Street and be integrated with the College's pre-clinical medical departments; and the clinical departments of RFHSM in Hampstead and those of UCHMS across Gower Street will also become part of the College.

This integration will not be accomplished in this decade. At present the Medical Schools receive their grant direct from the Court. When will the Court decide to allocate their grants for University College to distribute, and will they be earmarked? What safeguards will be needed to ensure maximum freedom for the clinical schools, attached as they are to hospitals, so that they are not starved of funds, and what safeguards are needed to ensure that far from being starved, they do not swallow up everyone else's supper? That is why we have to begin to plan for it now. The way in which the Medical faculty or faculties should be organised, the centralisation or devolution of finance to the clinical schools, and their representation on existing College bodies, are problems which will have to be worked out during the next few years.

National Needs and Numbers

The decision to found new universities, which was taken before the Robbins Committee even began to sit, and thereafter vastly to expand higher education, recognised a new national need. Even if a few still sulk and grumble understandably at some displeasing consequences which inevitably accompany a change of this magnitude, most people accept that it was simply no longer possible to have such a narrow spire surmounting the tower of secondary education which had grown immensely thicker. But there are signs that both the Government and the UGC have become hypnotised by numbers. The way in which the word 'target' is now used is suspicious; and the notion of 'hitting' it is fallacious. Dark hints fly through the air from Park Crescent suggesting that the Government can be induced to provide extra money for universities on one condition only, namely that they display a virtuosity equal to that of William Tell in hitting targets. So Vice-Chancellors find themselves debating whether or not they should ape the sales techniques of polytechnics and spend considerable sums of money advertising in the press the science courses which they find difficult to fill. Fearful rumours spread through the common rooms that if universities fall short by a few thousands of the numbers they 'promised' to take, the Government will cut their grant proportionately next quinquennium. Perhaps those who put these rumours about might remember that last quinquennium universities took 10,000 more students than they agreed to do because they responded to what they were told was a national need. Not that they got credit for so doing: quite the reverse. In an agonised whisper they were reminded that they had given the show away by demonstrat-

ing that they could take more students than the estimates allowed, and that therefore the Treasury would argue that the education of students could cost less, and the total grant for this quinquennium would accordingly be reduced. So we have reached the Gilbertian situation where if a university exceeds its target, its grant is cut; but if it fails to hit it, its grant is equally cut.

We need to re-establish in the mind of Whitehall that the expansion of student numbers is only one of the national needs in higher education. Places in universities are subject to the violent fluctuations of sentiment in sixth forms. The drop this year in applications for chemical engineering must not produce the absurd situation where departments in this subject throughout the United Kingdom are cut substantially simply because of a short-fall which is almost certainly temporary. In universities there are certain core subjects—parts of mathematics; parts of physics; chemistry and biochemistry—without which the natural sciences and engineering could not flourish and industrial and commercial skills would perish. The same is true of core subjects in the humanities. No student should study sociology or social administration unless he also studies history as an objective correlative. The English language —how to express feelings and ideas through it and how to reason in it—is another core subject. So are the languages of modern Europe. Is the Department of French to be cut in size because in the summer of 1972 eight thousand fewer boys and girls than in 1967 took French language at O-level? Universities have a right to insist that certain of their activities should not respond to annual fluctuations in the taste of the consumer. Not only do they have an eternal value: they correspond to long-term national needs, and as subjects they cannot be studied at university level unless they are granted basic resources in terms of staff.

Only a few years ago universities were asked to lay on one-year postgraduate courses which taught certain skills, and all over the country new M.Sc. courses appeared. No extra staff was granted. University teachers took on this teaching as a pleasurable additional duty and many of these courses were over-subscribed because industry and business had need of them. Are applicants for these courses to be turned away, because to admit them would involve exceeding the UGC quotas? We ought in the universities to state once again how we think we meet the nation's needs and what it is that we do which is central to those needs. Of course universities must respond to changes in demand and cannot expect to continue to teach the same subjects unchanged. Of course some departments

which have fallen on hard times cannot expect to fill staff vacancies when other departments which are hard-pressed to meet the increases in student numbers need more staff. But university courses differ from those in adult education, which were given (in the old days of the W E A) only if the lecturer could attract a dozen or so students regularly to attend his class. It seems only yesterday (it was in fact after the war) that university law schools began to throw off the deplorably narrow professional shackles which had characterised their courses, and began to offer subjects other than the intricacies of real property or the dissection of the snail which got into the ginger-beer bottle. This change reflected the belief that the training of our legal profession had been too little concerned with penology, criminology, and the relation of law to society. But are universities now to bid for the numbers who are being catered for in polytechnics and acquiring the basic requirements for practising law? Are they now to shift their teaching potential back to the business of getting as many students as possible through the tort and contract exams?

To Sum Up

Everything is overshadowed by the staggering reversal in the terms of trade which confronts this country—with the possibility that the universities now face a period in which they will be condemned either to a state approaching zero growth, or to a major reconstruction in their philosophy of terms of entry and unit costs. Anyone who did so little as glance at the U G C's letter announcing the Quinquennial Settlement will guess what it is that takes up a formidable slice of the development money available to universities. It is the medical education programme. All universities which are engaged in the medical programme—as indeed we are, for it is central to University College's development plans—know how expensive it is. How far can this programme be implemented and yet leave something for an increase in student numbers? When the U G C emerge from the blood-letting in the D E S and lick their wounds, this is the problem which will be uppermost in their minds.

These, then, were the hopes which inspired us during 1973 after the Quinquennial Settlement was announced; and these are fears which assail us when we contemplate the certainty that the promise of a hundred per cent supplementation will vanish and vast areas of deficit will yawn at the end of the quinquennium.

Life could hardly be more interesting.

January 1974 ANNAN, *Provost*

Building Programme

Building work in progress during the year has been rather overshadowed by the planning and debate which followed the proposal by the UGC, and a feasibility study by Mr Anthony Cox, for a major redevelopment of the College rectangle. This will provide accommodation for the pre-clinical departments of the Royal Free Hospital School of Medicine, which will be joining our own pre-clinical departments as part of the Todd scheme, and also for the replacement of some of our obsolete buildings and the huts. The Provost has referred to this development on page 17.

The construction of Wates House, the new building for the School of Environmental Studies in Gordon Street, has been in progress throughout the year. The major part of the cost of this project is being met from a substantial donation from the Wates Foundation. It is hoped that the building will be ready by the end of next session so that all the activities of the School can be brought together in the new building in October 1974. The completion of Wates House forms a vital stage in the College's redevelopment programme, since the Bartlett Building, now housing part of the School, will be required to accommodate the hut dwellers at present on the site between the Central Collegiate Building, 26 Gordon Square, and the South Cloisters, where the redevelopment of the Rectangle is planned to begin.

The new building for the Health Centre, financed by a benefaction from the Wolfson Trust, was completed early in the year and opened by Mr Leonard Wolfson at a ceremony on 21 February 1973.

Another improvement in amenities during the year was the opening of the extension to the Housman Room, the largest of the Staff Common Rooms. The room was extended over the Chemistry Yard and the original bow window repositioned. The whole area was refurnished and it now provides the staff with a large meeting place and bar for social occasions.

Work started on the new changing rooms at Shenley, but was delayed by material and labour difficulties in its early stages. It is hoped to have the building ready for occupation early in 1974. The completion of this work will allow some, at least, of the existing huts on the site to be demolished and the area landscaped.

The provision of additional residential accommodation for students has been given priority, especially because of the need to

replace Bentham Hall, which closed at the end of the session. Work was begun on three conversion schemes to provide student houses: Maples hostel in Grafton Way, to accommodate eighty students; five houses in Taviton Street, to increase the accommodation there by eighty; and four houses in Gower Street, to provide another seventy places. The Maples hostel and three of the Gower Street houses were ready for occupation by the opening of the session; the remaining houses will be completed during 1973-74. There are plans for further development in Camden Town, but these must await the necessary funds.

Finance

The total income of the College for 1972–73, from UGC grants and other sources, amounted to £9,948,209, an increase of £1,005,152 over 1971–72. Expenditure in 1972–73 was £10,131,440, inclusive of the cost of research borne by outside grants, which totalled £1,618,496 compared with £1,686,040 in 1971–72. The number of these grants was 468.

Capital grants announced for the year amounted to £139,894, compared with £404,394 for the previous year. Receipts against these and previous capital grants and capital expenditure amounted to £153,358 compared with £496,476 in 1971–72.

Student Numbers

Although the total student population fell to 5,455 from 5,500, the number of full-time students at the College remained almost constant at 4,705. The number of part-time students decreased from 793 to 750, reflecting the College policy to admit fewer such students to undergraduate non-degree courses. The student load, which is calculated for UGC purposes in terms of full-time equivalent students and takes account of part-time students, intercollegiate exchange and other commitments, reflected these fluctuations by falling slightly to 4,856.

The number of full-time undergraduate students remained almost constant at 3,344 compared with the record figure of 3,350 last session, while the number of postgraduate students, both full-time and part-time, increased from a total of 1,769 to 1,794. The number of overseas students continued to increase and reached the figure of 1,160.

The proportion of full-time undergraduate students living in halls of residence or other accommodation provided by the College or the University rose from 48·5 per cent in 1971–72 to 50·7 per cent.

Student Accommodation

Bentham Hall and the Slade Hostel in Cartwright Gardens, which had been in operation since 1950, with room for 190 students, closed at the end of the session on the surrender of the leases of these properties. The closure brought to an end the Wardenship of Mr Richard Freeman, who gave a special style to this Hall and to whom the College owes a special debt of gratitude for his wisdom and common sense.

The number of student places lost by these closures will be more than made up, when schemes outlined earlier for the conversion of properties in Grafton Way, Gower Street, and Taviton Street to provide study-bedrooms and catering facilities in student houses for about 230 students, are completed next session.

It is noteworthy that the high level of vacation earnings achieved by our halls and houses has enabled us to keep our charges to students within the notional figure for residence in the student grant.

Academic Matters

Three new courses, all at postgraduate level, were introduced in 1972–73. These were the M.Sc. course in Information Science within the School of Library, Archive, and Information Studies, a sub-branch of the M.Sc. in Economics entitled the Economics of Public Policy, and a further branch of study in the M.Sc. in Ocean Engineering. New courses projected for 1973–74 include the University Diploma in Material Culture within the Department of Anthropology, the M.A. in Linguistics, and the M.A. in Phonetics.

An interesting development has been made possible by a most generous benefaction from Mr David Astor for the endowment of a Visiting Professorship in Psychoanalysis at the College, with a view to the promotion of the study and critical examination of psychoanalysis including its theoretical aspects and cultural implications. With the consent of Dr Anna Freud the Visiting Professorship is to be called the Freud Memorial Professorship. It will be held normally for one year at a time by distinguished scholars or analysts, who will be attached to one or other department in the College according to their interests. A Board of Management, including academic staff of the College and a member appointed by the President of the British Psychoanalytical Society, will oversee the working of the scheme and propose holders of the Professorship. The first appointment will be made in 1973–74.

Towards the end of last session the opportunity was taken, with the retirement of the Head of the Department, to consider the

future of our Department of Astronomy. It was felt that this small Department could be best provided for in close association with the Department of Physics, where extensive technical facilities could be provided and where major programmes of research in the fields of theoretical astrophysics, X-ray, ultra-violet, and infra-red astronomy had been in operation for many years. Accordingly, the Departments of Physics and Astronomy were combined at the beginning of the session 1972–73 to form a single Department of Physics and Astronomy. Separate identity of Astronomy courses within the combined Department has been maintained to meet and encourage the present student demand for astronomy.

The James Joyce Centre, which has been established at the College under an arrangement with the Trustees of the James Joyce Estate, was formally opened on 7 June 1973. To mark the occasion Professor Richard Ellmann, Goldsmiths' Professor of English Literature at Oxford, and author of the standard biography of Joyce, gave a lecture on 'James Joyce the Mythmaker', and in the Library there was an exhibition of Joyce material and also of other modern books and manuscripts, including some of the material in the Orwell archive. The Centre is intended to provide Joyce scholars with a useful adjunct to the Joyce collection at the British Museum. Gifts from Messrs Faber & Faber, the James Joyce Trustees, and the Society of Authors form the basis of the collection, which is housed in the College Library, and which will eventually contain microfilm, records, and ancillary Joyce materials of all kinds. The James Joyce Trustees have established a trust fund for the specific purpose of the Centre.

The facilities of the Computer Centre continue to provide for the bulk of the College computing needs and contribute greatly towards the needs of other Schools of the University, which pays the running costs. Approval has been given by the Computer Board for Universities and Research Councils for extensions worth £100,000, to be made by early 1974, which will increase the core store, and provide an Express Terminal and a multi-access system. An incremental graph plotter has been purchased with a special grant from the College. Some of the accommodation formerly used by the Health Centre is being adapted for use by the Computer Centre.

The Audio-Visual Unit has been able to expand its activities as a result of the provision of a workshop and a television viewing room seating sixty-five persons. Sixteen departments have used videotaped material in teaching, and eleven departments have been

involved in the production of videotapes using the Unit's television cameras. The television system has also been used in the production of a series of student television programmes and for creative work in the Slade School. The demands from departments for advice, technical assistance, and the loan of audio-visual equipment continue to increase.

In November 1972, a representative of the Nuffield Foundation Group for Research and Innovation in Higher Education visited the College and held talks with members of staff in a variety of departments. The purpose of the visit was to collect information about recent developments in undergraduate courses, teaching methods and assessment procedures in the College, as a contribution towards the Group's current survey of the problems involved in undergraduate teaching and the ways in which universities are meeting these problems. The talks held in the College proved valuable both to the College and to the Nuffield Research Group, and those members of staff who took part have since received regular Newsletters from the Group on the many interesting innovations in the undergraduate area which have come to light in the course of the Group's investigations. Useful contacts with other universities have thereby been established.

A list of publications of members of the College departments will be found on pages 44–107. This is an impressive record and though no attempt is made here to summarise the research projects on which the departments have been engaged during the session, the list contains much work of that 'relevant' character to which the Provost referred earlier. Many departments have attracted substantial grants from Research Councils and other grant-giving bodies, which are gratefully acknowledged in Appendix XIII.

The seventh annual Schools Conference, which took place from 28 to 30 March, followed the pattern of last year's Conference when for the first time invitations were extended to a number of local Education Authority Careers Officers. Their participation was once again of great value and has established itself as a regular feature of the Conference. About eighty guests from various parts of England and Wales took part in the proceedings, which were as enjoyable and profitable as on previous occasions. The success of the Conference owed much to the willingness of College staff to take part in both the business and the social sessions and this was greatly appreciated by our guests. The Conference continues to show schools what the College has to offer and to build up personal links between College departments and those responsible for

advising prospective students. Certain departments have now begun to run similar conferences of a more specialised character.

A Reunion for former students of the College was held on 18 May 1973. At the invitation of the Provost and the President of the Association of Friends of the College, 350 former students attended the Reunion, which took the form of a reception followed by a dinner. The function was open to any generation of former students.

The Seventy-seventh Foundation Oration was delivered by Dr Jonathan Miller in the Collegiate Theatre on 12 March 1973. The subject of his oration was 'Censorship'.

Association of Friends of University College London

During 1972–73 the Friends of University College authorised grants totalling £2,916 in support of the following projects: new storage bins for the College Wine Cellar (£605); a new lighting board for the Union's Theatre Workshop (£600); furnishings for the common room in the Christopher Ingold Laboratories (£500); the refurbishing of the small lounge in the Union Premises at 25 Gordon Street (£370); the Day Nursery at 20 Taviton Street (£350); the reconditioning of pianos for the Music Society (£200); the acquisition for the Library of a letter from Jeremy Bentham to William Wilberforce (£143); a new boat for the University College and Hospital Boat Club (£78); blankets for students of the Department of Botany and Microbiology undertaking field-work at Blakeney Point Field Station (£50); heaters for the amenity hut at the Social Centre at Holmbury St Mary (£20).

The Association of Friends has thus continued its important role in the life of the College in providing for students and staff some much needed amenities which cannot be supported by funds from public sources. The Association hopes that by increasing its membership and subscriptions it will be able to continue to finance those projects which do much to enhance the corporate life of the College.

SUPPLEMENT

HONOURS AND DISTINCTIONS

In the New Year Honours in 1973 Professor F. G. Young, Professor of Biochemistry in the University of Cambridge, Fellow of the College and formerly Professor of Biochemistry at the College, and Dr F. A. Vick, President and Vice-Chancellor, Queen's University of Belfast, and a former member of staff in the Department of Physics, were created Knights Bachelor. The C.B.E. was conferred on E. H. Harman, Chairman of the South Western Gas Board and a former student in the Faculty of Science, and on three former students in the Faculty of Arts: R. C. Honeybone, Pro-Vice-Chancellor, the University of the South Pacific, Fiji, A. E. L. Parnis, lately Assistant Secretary to the University Grants Committee, and D. T. Richnell, Director and Goldsmiths' Librarian, University of London Library.

In the Queen's Birthday Honours T. A. L. Paton, Fellow of the College and a member of the College Committee, and Dr J. A. B. Gray, Secretary to the Medical Research Council and formerly Professor of Physiology at the College, were created Knights Bachelor. The C.B.E. was conferred on Emeritus Professor Thorold Dickinson, formerly Professor of Film at the College, and on two former students: Professor P. W. Richards, Professor of Botany, University College, Bangor, and Dr J. B. Brooksby, Director of the Animal Virus Research Institute, Pirbright.

A number of interesting and important appointments were announced during the session. Appointments of members of the College included those of Professor Eleanor M. Burbidge as a member of the Requirement Board for Computers, Systems and Electronics set up by the Secretary of State for Trade and Industry, Professor L. Fowden as Director of Rothamsted Experimental Station, Lord Goodman as Chairman of the Housing Corporation and the National Building Agency, Professor Lord Lloyd as Chairman of the Board of Governors of the British Film Institute, Professor T. J. Chandler, Dr J. G. Collingwood, Professor E. J. Denton, and Sir Frederick Warner as members of the Royal Commission on Environmental Pollution, Dr Edwin Clarke as Director of the Wellcome Institute for Medical Research, R. H. Elvery as Chairman of the British National Committee for Non-Destructive Testing, and H. M. Nixon as Honorary Librarian and Librarian-elect of Westminster Abbey. A former member of the Library staff,

A. J. Loveday, was appointed Secretary to the Standing Conference of National and University Libraries, and appointments of former students who had also held honorary appointments in the College were those of K. C. Christofas as Director-General responsible for economic and financial questions and parliamentary affairs in the Secretariat of the Council of Ministers of the European Economic Community, A. J. Egginton as Head of the Engineering Division of the Science Research Council, and Professor J. E. Salmon as a member of the Technician Education Council set up by the Secretary of State for Education and Science. Appointments of other former students included J. H. Smith as Governor of the Gilbert and Ellice Islands, E. V. Symons as H.M. Chief Inspector of Taxes, Professor W. Johnson as a member of the Requirement Board for Engineering Materials set up by the Secretary of State for Trade and Industry, Professor W. A. C. Stewart and M. Morris as members of the Advisory Committee on the Supply and Training of Teachers set up by the Secretary of State for Education and Science, and B. M. Grime as a member of the South West Industrial Development Board.

Professor R. A. Gregory, Fellow of the College, Professor Sir Bernard Katz and Professor Sir Harrie Massey were all re-appointed Vice-Presidents of the Royal Society, and Professor J. Lewis, formerly Professor of Chemistry at the College, was elected to a Fellowship of the Society. Professor J. F. Kermode became a Fellow of the British Academy and E. G. M'Ewen, Fellow of the College, a Fellow of the Royal Society of Edinburgh. Professor G. R. Elton, a former History student, was elected President of the Royal Historical Society, and T. A. L. Paton, Fellow of the College, became Chairman of the Council of Engineering Institutions, of which Major-General Sir Leonard Atkinson and M. W. Leonard, both former Engineering students, were elected Vice-Chairman and Secretary respectively. Dr D. McNally was appointed President of Commission 46 (Teaching of Astronomy) of the International Astronomical Union, Dr J. Lewins was elected a Vice-President of the Institution of Nuclear Engineers, Mrs Ruth Glass an Honorary Fellow of the Royal Institute of British Architects, Professor E. H. Thompson an Honorary Member of the Photogrammetric Society, and Robert Clatworthy, a former Slade student, to membership of the Royal Academy. Osbert Lancaster, Fellow of the College, was elected Master of the Worshipful Company of Carpenters. Appointments to membership of the Council for National Academic Awards included Dr Patricia H. Clarke, and three former members

of the College: Dr A. H. Chilver, Professor A. M. Ross, and Professor J. E. Salmon.

Sir Edward Playfair, Honorary Fellow of the College and Vice-Chairman of the College Committee, was elected a Fellow of Imperial College of Science and Technology, and Dr E. J. Cohn, a former Laws student, a Fellow of King's College, London.

The following were honoured by election to foreign academies: Professor E. G. Turner was elected a Foreign Member of the Accademia di Archeologia, Società Nazionale di Scienze, Naples, Professor Elizabeth M. Wilkinson a Corresponding Member of the Akademie der Wissenschaften zu Göttingen, Professor R. Wilson a Member of Velenskat Societyen of Lowden, Sweden, and Professor J. Z. Young a Foreign Fellow of the Accademia Nazionale dei Lincei of Rome. Professor P. G. Foote was appointed a Commander of the Order of the Falcon of Iceland, and Professor M. G. Smith became the first recipient of the Jamaican Order of Merit.

Honorary degrees were conferred on members of the College as follows: the D.Eng. of the University of Sheffield on Emeritus Professor H. E. M. Barlow, the D.Litt. of the University of Nottingham and the D.U. of the University of Essex on Professor R. A. Humphreys, the D.Sc. of the University of Kent and of the University of London on Professor Sir George Porter, the D.Litt. of the University of Newcastle upon Tyne on Sir John Summerson, and the LL.D. of the University of Liverpool on Dame Veronica Wedgwood. Honorary degrees conferred on former members of the College included: the D.Sc. of the University of Reading on J. Dimmick, the D.Univ. of the University of York on B. M. Feilden, the D.Litt. of the University of Sussex on Duncan Grant, the LL.D. of the University of Dublin on Sir Francis Vick, and the D.Litt. of the New University of Ulster on Professor W. A. C. Stewart.

Professor R. E. D. Bishop was awarded the Rayleigh Gold Medal of the British Acoustical Society, Dr F. H. C. Crick a Royal Medal of the Royal Society, Dr P. N. Dilly the George Medal for Arctic rescue work, Dr Joan Evans the Gold Medal of the Society of Antiquaries of London, Professor R. G. Hopkinson the Gold Medal of the Illuminating Engineering Society, Professor Randolph Quirk the Diamond Jubilee Medal of the Institute of Linguists, Dr Pamela Lamplugh Robinson the Wollaston Fund of the Geological Society of London, Professor E. H. Thompson the Patron's Medal of the Royal Geographical Society, and Professor J. Z. Young the Linnean Gold Medal of the Linnean Society of London. Professor

R. J. Gillespie, formerly both a student and a member of staff in the Department of Chemistry, was awarded the American Chemical Society's Award for Distinguished Service in the Advancement of Inorganic Chemistry, and, of other former students, D. A. Gray was awarded a Moiety of the Lyell Fund of the Geological Society of London, and David Storey the Geoffrey Faber Memorial Prize.

APPOINTMENTS

Mr P. W. Heath was appointed, on the nomination of the Old Students' Association, to membership of the College Committee, Mr F. E. P. Sandilands became a member of both the College Committee and the Finance Committee, and Sir Philip Rogers a member of the Finance Committee.

At the beginning of the session, Dr D. Lowenthal, previously Secretary and Research Associate, American Geographical Society, came to the second Chair of Geography, and Dr J. P. Stern, who had been University Lecturer in German, Fellow and Tutor at St John's College, Cambridge, was appointed to a Chair of German and the Headship of the Department. Dr R. Wilson, formerly Director of the Astrophysics Research Unit of the Science Research Council, came to the Perren Chair of Astronomy on 1 January 1973, and Dr G. P. Goold, who was Professor of Greek and Latin and Chairman of the Department of Classics at Harvard University, was appointed to the Chair of Latin and the Headship of the Department on 1 July 1973. The title of Professor of Physiology was conferred on Dr R. D. Harkness.

Dr N. V. Smith came from the School of Oriental and African Studies to the Readership in Linguistics at the beginning of the session, and A. L. Allen was appointed to the Readership in Surveying in January 1973, having previously been a Lecturer in the Department of Photogrammetry and Surveying. The title of Reader was conferred on Dr R. J. H. Clark (Chemistry), Dr Edwin Clarke (History of Medicine), Dr D. H. Davis (Physics), Dr Ted Honderich (Philosophy), Dr Hilda M. Hulme (English), Dr M. D. Lilly (Enzyme Technology), Dr Pauline M. Meadow (Biochemistry), Dr M. E. O'Neill (Mathematics), Dr R. J. Rowbury (Microbiology), Dr A. C. H. Smith (Physics), and Dr A. C. Walker (Structural Engineering).

During the session, Professor Mary R. Truter was appointed Visiting Professor to the Department of Chemistry. In 1970 the title of Professor of Chemistry had been conferred on her by the University, in respect of her appointment as Deputy Director of the

Agricultural Research Council's Unit of Structural Chemistry, of which the late Professor Sir Ronald Nyholm had been Honorary Director, and the change of title has resulted from the transfer of the Unit to Rothamsted Experimental Station. The following Visiting Professors were also appointed: Professor R. Djupedal, University of Trondheim (Scandinavian Studies); Dr L. Fowden, Director, Rothamsted Experimental Station (Botany and Microbiology); E. C. Goldman, Manager, Operation and Production Division, Shell International, The Hague (Mechanical Engineering); Professor Hilda Kuper, Professor of Anthropology, University of California at Los Angeles (Anthropology); Professor D. A. Okun, Professor of Environmental Engineering and Head of the Department of Environmental Sciences and Engineering, University of North Carolina (Civil and Municipal Engineering); Walter Segal, Banister Fletcher Lecturer (Environmental Studies); Professor E. Wistrand, Institute of Classical Studies, Göteborg University (Latin).

Other important College appointments included those of Professor E. H. Brown as Dean of Students, in succession to Professor D. C. Holland, and H. Marriott to the office of Senior Tutor, which had been reinstated at the beginning of the session. The Senior Tutorship had been re-titled 'Dean of Students' in 1968, but experience had shown a need for both offices. Dr T. W. Jones succeeded Dr Peggie M. Hobson as Warden of Campbell Hall, and Dr J. G. Yates became editor of *The Bulletin,* in place of Dr A. A. Long.

There were a number of changes in College Faculty appointments: Professor Arthur Brown, appointed Vice-Dean of the Faculty of Arts, was succeeded during the session by Professor D. M. Wilson; Professor K. O. Kemp became Vice-Dean of the Faculty of Engineering, and Professor R. G. Hopkinson and Professor Lord Llewelyn-Davies respectively Dean and Vice-Dean of the Faculty of Environmental Studies.

In the University of London Professor P. E. Corbett was elected Dean of the Faculty of Arts and Professor Marian E. A. Bowley Dean of the Faculty of Economics, both for the period 1972–74. Professor Randolph Quirk became Chairman of the Academic Council and Professor H. Billett Chairman of the University Entrance and School Examinations Council.

During the year announcement was made of the appointment of a number of members of the College to academic posts outside the College. Appointments of Fellows of the College included those

of Dr F. Hartley as Deputy Vice-Chancellor of the University of London, Professor E. C. Amoroso as a Special Professor in the Department of Physiology and Environmental Studies, School of Agriculture, University of Nottingham, and Professor L. Mary Pickford as a Special Professor of Endocrinology also at Nottingham. On the academic staff, Professor Arthur Brown was appointed to the Chair of English at Monash University, Professor T. J. Chandler as Professor of Geography in the University of Manchester, Professor D. P. Craig as Visiting Professor in Chemistry in the University of Stirling, Dr W. Glyn Jones to the Chair of Scandinavian Studies in the University of Newcastle upon Tyne, Professor J. F. Kermode to the King Edward VII Chair of English Literature in the University of Cambridge from October 1974, Dr A. A. Long to the Gladstone Chair of Greek in the University of Liverpool, and Dr D. J. Robinson to an Associate Professorship in Latin-American Geography in the University of Syracuse. The title of Reader in Clinical Psychopharmacology was conferred on Dr M. H. Lader in respect of his post at the Institute of Psychiatry.

Appointments of the following former members of the academic staff and former students to academic posts outside the College were also announced: Dr I. M. Allison to the Chair of Experimental Mechanics in the University of Surrey, Dr N. J. Ashford as Professor of Transport Planning at Loughborough University of Technology, Professor C. A. Burns to the Chair of French in the University of Birmingham, Professor E. R. Dobbs to the Hildred Carlile Chair of Physics at Bedford College, Professor P. B. Gahan to the Chair of Botany at Queen Elizabeth College, Professor A. A. Glynn to the Chair of Bacteriology at St Mary's Hospital Medical School, Dr D. W. O. Heddle to the Chair of Physics at Royal Holloway College, Dr A. W. G. Manning to the Chair of Natural History in the University of Edinburgh, Dr G. B. Parry to the Edward Caird Chair of Politics in the University of Glasgow, Professor R. Penrose to the Rouse Ball Chair of Mathematics in the University of Oxford, Dr R. G. Priest to the Chair of Psychiatry at St Mary's Hospital Medical School, Dr P. Walcot to a Chair of Classics at University College, Cardiff, and D. Wallis to a Chair in the Department of Applied Psychology at the University of Wales Institute of Science and Technology. The University of London conferred titles of Professor of Haematology on Dr E. R. Huehns and Professor of Endocrinology on Dr E. J. Ross, both of University College Hospital Medical School, and the title of Professor of Neuroendocrinology on Dr B. T. Donovan,

Institute of Psychiatry; the University of Leicester conferred the title of Professor of Physics on Dr K. A. Pounds, and the University of Reading the title of Professor of Chemistry on Dr P. F. Holt. Dr R. R. Hetherington was appointed a Visiting Professor in Clinical Psychology in the University of Liverpool on his appointment as Secretary-General of the British Psychological Society. Appointments to Readerships included Dr W. H. Brock (History of Science), University of Leicester, Dr Naomi Datta (Bacteriology), Royal Postgraduate Medical School, Dr W. R. Hayhow (Anatomy), London Hospital Medical College, and Dr W. K. Norris (Economics), Brunel University. The title of Reader was conferred by the University of London on Dr T. A. Connors (Biochemical Pharmacology), Institute of Cancer Research, and on Dr R. G. Gosling (Physics applied to Medicine), Guy's Hospital Medical School; and by the University of Reading on Dr Olwen H. Hufton (History).

RETIREMENTS

Professor H. Kalmus was educated in the University of Prague, where he was Lecturer in Zoology and Comparative Physiology from 1931 to 1939. He came to this country in 1939 and became a member first of the Department of Zoology and Comparative Anatomy and then of the Department of Biometry at University College, working with Professor J. B. S. Haldane through the war. In 1946 he joined the Galton Laboratory as Lecturer in the Department of Eugenics, Biometry and Genetics, becoming Reader in 1958 and Professor of Biology in 1967. In his long research career he has made contributions over a wide range of biological topics, and is particularly known for his work on insect behaviour and also on the genetics of sense perception in man. He has been a visiting Professor at McGill University, at Indiana University, at the Hebrew University in Jerusalem, and more recently at the University of Ife, Nigeria. The University has conferred on him the title of Emeritus Professor and he will be continuing his association with the College as an Honorary Research Fellow.

Professor H. O. Schild retired from the Chair of Pharmacology. Born in Fiume, he studied in Munich and came to this country in 1932. He worked at the National Institute for Medical Research and then from 1933 at the University of Edinburgh, until his appointment as Demonstrator at the College in 1937, where he has been ever since. He became Reader in 1945 and was appointed to the Chair of Pharmacology and the Headship of the Department in

1961. In 1966 he was elected a Fellow of the Royal Society. During his distinguished career he has made significant contributions in a number of different fields in pharmacology. From his studies of drug antagonism he applied a quantitative approach to the classification of drug receptors. In the field of bioassay he was one of the first to apply statistical concepts and to develop automated apparatus using living tissues for the assay of microquantities of drugs. He was a pioneer in the study of the mechanism of allergic reactions. From studies of inhibition of contraction of depolarized smooth muscle he contributed significantly to our knowledge of the mechanism of action of drugs. Throughout his career he was interested in the properties of the biogenic amines and in particular the release of histamine in the immediate type hypersensitivities and its action on smooth muscle. He suggested the presence of a second histamine receptor therein. From 1964 to 1967 he was Dean of the Faculty of Medical Sciences and guided it wisely in a period of expansion and change. As an Emeritus Professor and an Honorary Lecturer he will be maintaining his long association with the College.

Dr R. C. Brown retired after forty-seven years' service with the College. He joined the Department of Physics as a Demonstrator in 1926, became a Lecturer in 1930, and a Senior Lecturer in 1945. In 1961 he succeeded Orson Wood as Careers Adviser, retaining his Senior Lectureship in Physics in a part-time capacity. Dr Brown was a most valuable member of the Department of Physics, being a very good teacher, not only in the class-room but also in the laboratory. For many years he taught physics to 1st M.B. students and properties of matter at all levels, and latterly he had taught optics. He wrote a well-known text-book of physics for use in sixth forms. His research work was in the field of surface tension, in which he is an acknowledged authority. He had been Secretary of the University Board of Studies in Physics, and his service on College committees included recently the Vice-Chairmanship of the Student Health Association Committee. His work as Careers Adviser extended over a period of rapid growth in student numbers and of incredible complications in the employment situation. Successive generations of students have had cause to be grateful to him for his humanity and understanding and for the range of knowledge and experience he brought to their careers problems. He will be greatly missed in the College.

E. W. Foster retired from his Lectureship in the Department of Physics and Astronomy. He joined the Department of Astronomy

in 1953, having previously held a number of research appointments elsewhere. His experience and high standards in spectroscopy and laboratory physics enabled him to make considerable contributions to the measurement of fundamental spectroscopic quantities of astrophysical importance. The Department greatly valued his teaching work in astrophysics and molecular spectroscopy.

Emeritus Professor F. Bergel relinquished his Honorary Lectureship in the Department of Pharmacology at the end of the session. His retirement ended an association with the Department extending over a period of twenty-six years, during which he made valuable contributions to its work. Professor Bergel was Head of the Chemistry Department at the Institute of Cancer Research from 1952 to 1966.

Stuart Angus, Deputy Secretary of the College, retired at the end of the session. He joined the College as Executive Assistant in 1960, after a career in the Malayan Civil Service, where he had been Deputy Secretary to the Treasury of the Federation of Malaya. His wide experience of responsibility at high level, his judgment and wise counsel, and his unshakeable integrity, have been of immense value during a difficult period in which the College administration has had to respond to the continually changing circumstances in universities. His colleagues will miss his kindly advice.

Other members of the administrative staff who retired were: H. Hopkinson, Maintenance Officer of the College since 1957; Miss Margaret R. Melrose, Deputy Registrar (Postgraduate Studies), who joined the College as Faculty Clerk in the Faculty of Arts in 1945 and became Deputy Registrar in 1948; and Miss Sybil M. Smith, Domestic Superintendent since 1954. They will all be remembered for their years of loyal service and for the contributions they made, in their different ways, to the well-being of the College.

RESIGNATIONS

At the end of the session the College Committee lost the services of Mr W. Greaves and the Hon. Virginia Makins, both of whom joined the Committee in 1968, and of Mr G. Radice, who was appointed in 1971.

Professor Arthur Brown resigned at the end of the session to take up a Chair of English at Monash University. He entered the College as a student in 1939, became Quain Student in the Depart-

ment of English Language and Literature in 1947 and Lecturer in 1950. The title of Reader in English was conferred on him in 1956 and that of Professor of English in 1962. In 1969 he was appointed to the Chair of Library Studies and the Directorship of the School of Library, Archive, and Information Studies. He was awarded the degree of D.Lit. in 1965, and in 1971 he was elected a Fellow of the College. Professor Brown made notable contributions to the administrative and social life of the College. He was elected to the Library Committee in 1963 and succeeded his colleague and close friend Professor Hugh Smith as Chairman in June 1967. At the same time he also took over the chairmanship of the Publications Committee. In his final session in College he was Vice-Dean of the Faculty of Arts. As Quain Student, he gave great help to Professor Smith in building an Elizabethan handpress on which he gave demonstrations and instruction to students, not only of the College, but of the University as a whole. He was always generously prepared to carry out special printing for College dinners and other occasions. In 1961 he succeeded Professor F. P. Wilson as General Editor of the Malone Society and during the ten following years saw many volumes through the press, and edited several himself. As a founder member of the Crabtree Foundation he served as the first Secretary to the Foundation in 1954, delivered the second oration in 1955, and was elected President in 1961.

Professor T. J. Chandler resigned from his Professorship of Geography to take the Chair of Geography at the University of Manchester. He was a student at King's College London and did his National Service as an Education Officer in the Royal Air Force before taking his first appointment at Birkbeck College. He joined University College in 1956, becoming Reader in 1965 and Professor in 1969. Professor Chandler made an early reputation with his work on London's climate. Through his lively concern for the study of urban climates, he helped to strike close links within the College between the Department of Geography, the School of Environmental Studies, and the Faculty of Engineering. Professor Chandler was the Editor of *Weather* from 1958 to 1961 and he has been Honorary Secretary of the Royal Meteorological Society since 1969. In 1968 he was Chairman of the Symposium on Urban Climates and Building Climatology, organised jointly by the World Meteorological Organisation and the World Health Organisation, and in 1973 he was appointed a member of the Royal Commission on Environmental Pollution.

Professor Leslie Fowden resigned his Professorship of Plant Chemistry in the Department of Botany and Microbiology on 31 March 1973, on his appointment to the Directorship of Rothamsted Experimental Station. A student of Chemistry at University College, he graduated in 1945, and obtained a Ph.D. in physico-organic chemistry in 1948. After working for three years in the Human Nutrition Unit of the Medical Research Council at Mill Hill, he returned to the College in 1950 as a Lecturer in the Department of Botany and subsequently became a Reader and then in 1964 Professor of Plant Chemistry. His research, which has earned him a worldwide reputation, has been concentrated on the non-protein amino acids in plants, and more recently has been concerned with the biological significance of these compounds. He was elected to a Fellowship of the Royal Society in 1964. His resignation is a severe loss to the Department of Botany and Microbiology, but the loss to the College spreads far beyond the narrow confines of his research and teaching activities. He distinguished himself as Dean of the Faculty of Science from 1970 to 1973 and as a most wise counsellor on important College committees. His good counsel and precision of mind fit him admirably for the important and exacting post he now occupies.

OBITUARY

We record with regret the death during the year of a number of members and former members of the College. They included four Honorary Fellows and four Fellows.

The College heard with deep regret of the death on 9 May 1973 of Lord Cohen of Walmer, Honorary Fellow of the College since 1955, and Chairman of the College Committee from 1953 to 1963. His years in office, which began when the College was still faced with severe difficulties resulting from the heavy war damage it had sustained, marked a notable period in the development of the College. He gave personal attention to every major problem that arose, and his mastery of detail, his rapidity of decision, and his constructive imagination were of immense value to the College. When he resigned the Chairmanship in 1963 the Professorial Board, in recording their appreciation and gratitude for his distinguished services to the College, were particularly sensible of the high respect in which Lord Cohen had held academic purposes, the close attention he had given to the management of the affairs of the College, and the wide range of his interest in the general life of the College as an academic society. The College Committee

associated themselves with this tribute, and recorded the sense which they entertained of his advice and guidance in their proceedings over a long period. Lord Cohen was the wisest of counsellors. Members of the College will long remember his friendly understanding of their problems.

Emeritus Professor D. M. S. Watson died on 23 July 1973 at the age of eighty-seven. He was Lecturer in Vertebrate Palaeontology in the Department of Zoology and Comparative Anatomy at the College from 1912 until his appointment in 1921 to the Jodrell Chair of Zoology and Comparative Anatomy and the Headship of the Department. On his retirement from the Jodrell Chair in 1951 he continued to work in the Department as an Honorary Research Associate. His resignation in 1965 terminated fifty-three years of continuous service in the College. He gave outstanding service as Chairman of the College Library Committee during the difficult years from 1942 to 1951, and when the National Central Library and Library Association building was acquired by the College, mainly for Library purposes, and opened in 1967, it was named the 'D. M. S. Watson Library'. His distinguished contributions to zoology and palaeontology were recognised by the many honours conferred on him, both at home and abroad, including a number of honorary degrees. He was elected a Fellow of the Royal Society in 1922 and an Honorary Fellow of the College in 1948. A man of wide learning and a gifted lecturer, his wisdom and experience made him a valued member of the College community. He will be remembered with respect and affection by colleagues and students alike.

The death of Emeritus Professor Daryll Forde on 3 May 1973 was an irreparable loss to the international community of anthropologists and to Africanists of all disciplines. From 1919 to 1928 he was first a student and then a member of staff of the Department of Geography at the College. He soon extended his interests to primitive technology and prehistoric archaeology, undertook anthropological field research, and in 1930 became Gregynog Professor of Geography and Anthropology in the University College of Wales. In 1934 he published his celebrated book, *Habitat, Economy and Society,* a classic comparative study of human geography and social anthropology. It was on a visit to south-eastern Nigeria in 1936 that he found a task worthy of his talents and energy, and one that occupied the rest of his life, namely, the organisation and promotion of liberal studies of the peoples of Africa. In 1945 he came to the newly-established Chair of Anthro-

pology at University College, where he created and developed the new Department. He was editor of *Africa* from 1943 to 1972 and Director of the International African Institute from 1943 until the time of his death, and it was there that he initiated the monumental Ethnographic Survey of Africa. A Fellow of the College since 1946, Daryll Forde was President of the Royal Anthropological Institute in 1947 and 1948, became a Fellow of the British Academy in 1966, and Professor Emeritus on his retirement in 1969. A man of broad vision, enthusiasm, energy, and generosity, he was always willing to help colleagues, students and strangers alike with his unrivalled knowledge of anthropology and Africa.

Professor William Townsend, who died in Canada on 4 July 1973, first came to University College in 1926 when seventeen, and entered the Slade School under Professor Tonks. He was a distinguished student, and first winner of the Steer Prize for Landscape Painting. After war service in the Royal Artillery, he taught at Camberwell School of Art from 1946 until 1949, when he came to the Slade. In 1968 he was appointed Professor of Fine Art and elected to a Fellowship of the College. While structural aspects of landscape remained his central theme, his work underwent major development, guided by his keen intelligence as an artist. He exhibited widely in England and Canada, and is represented in the Tate Gallery, the Victoria and Albert Museum, and other public and private collections here and abroad. His first association with Canada in 1951, when he was invited to the Banff Summer School of Fine Arts in Alberta, was followed by many more visits enabling him to widen his acquaintance with the Canadian art situation. In 1964 he selected the Sixth Biennial of Canadian Painting for the National Gallery of Canada. He influenced the founding of the Canadian Leverhulme Painting Scholarship. In 1970 he edited and contributed to Studio International's *Canadian Art Today*. His great feeling for places, ever present in his paintings, showed also in his book on Canterbury in Batsford's *Face of Britain* series, and in his distinguished B.B.C. broadcasts of the 1960s on French, English, and Canadian Towns. A natural diarist from his earliest years, Townsend's journal—now in the College Library—should prove an important document on twentieth century arts. An outstanding teacher, exceptionally well informed, with generous nature, balanced judgment, enthusiasm, wit and gentleness, he was greatly loved by all who came into contact with him.

Other Honorary Fellows and Fellows who died during the year were: Professor Lord Rosenheim, Emeritus Professor of Medicine

and formerly Director of the Medical Unit at University College Hospital Medical School, Physician at University College Hospital, and Past-President of the Royal College of Physicians; Lord Tangley, a former President of the Law Society, who had served on the College Development Council and given invaluable help and advice; Professor Hans Thacher Clarke, Professor Emeritus of Biochemistry at Columbia University; and Sir Francis Walshe, Honorary Consulting Physician to University College Hospital and to the National Hospital for Nervous Diseases, London.

The College heard with deep regret of the death of Mr Sylvester Gates on 1 November 1972, shortly after he had relinquished his membership of the College Committee. He had joined the College Committee in 1961, and had also served on other important committees of the College. The College is especially indebted to him for the part he played as Chairman of the British Film Institute when, through the good offices of the Institute, grants were obtained in 1959 to support the introduction in the Slade School of the study of and research in the Film. Over the years his wisdom, legal knowledge, and wide experience of the world made him a most valued member of our governing body.

Emeritus Professor W. R. Dean died on 24 January 1973. He came from the University of Cambridge to the Goldsmid Chair of Mathematics, which he held from 1952 to 1964. He was Joint Head of the Department of Mathematics from 1958 to 1964, an honorary member of the staff of the Department from 1968 up to the time of his death, and one of the founder editors of *Mathematika*. Professor Dean had an intrinsic interest in mathematical scholarship for its own sake, and maintained a flow of important and stimulating research papers over a period of forty years. His main fields of research were in fluid mechanics and elasticity, and his name will always be associated with his work on secondary flow in pipes and on wave reflection from obstacles submerged in water. Modest and self-effacing by nature and the most gentle of men, he will be remembered with gratitude and affection by his colleagues and by the many students he helped and encouraged.

Professor B. A. Wright, an honorary member of the staff of the Department of English Language and Literature since 1958 and an Emeritus Professor of the University of Southampton, died on 7 June 1973.

Other former members of the academic staff who died were Professor N. K. Adam, Emeritus Professor of Chemistry in the University of Southampton, who held an honorary appointment in

the Department of Chemistry from 1929 to 1937; Professor H. P. Gilding, Emeritus Professor of Physiology in the University of Birmingham, a member of staff in the Department of Physiology and Biochemistry from 1929 to 1933; and T. H. Walker, Lecturer in the Department of Mechanical Engineering from 1950 to 1970.

The College administration suffered a great loss by the death on 24 February 1973 of E. H. Swain, Bursar of the College. He came to the College in 1950 from Oxford, where he had been Surveyor to the University. He found the reconstruction of our severely war-damaged buildings still in progress, and then faced a period of major expansion and development of the College sites and buildings, both within and outside the rectangle, that continued over the whole of his time at the College. In addition he had responsibility for the day to day maintenance and adaptation of our buildings. To this wide range of duties, with problems of immense complexity, he brought professional skill, energy and initiative, and a quiet confidence that earned the respect of colleagues and members of committees who looked to him for advice. But perhaps, above all, it was his devotion to the College that enabled him to carry the tremendous burden of his office and to play such an important part in a difficult period of the College's development. His colleagues will remember with admiration his courage and determination during his long illness.

In the course of the year the College heard with regret of the death of many of its former students. Among them were Lady Gollancz (née Ruth Löwy), a former student in the Slade School of Fine Art; V. I. Gaster, a member of the Senate of the University of London since 1946; Professor E. A. Owen, Emeritus Professor of Physics, University College of North Wales; and Denys G. Wells, Vice-President of the Royal Society of British Artists.

PUBLICATIONS

BY MEMBERS OF COLLEGE DEPARTMENTS

1 AUGUST 1972—31 JULY 1973

FACULTY OF ARTS

ANTHROPOLOGY

BARNICOT, N. A., A man of many interests (Sir Grafton Elliot Smith). *Nature, Lond.*, 240 (1972), 260–1.
(with Mukherjee, D. P., Woodburn, J. C., Bennett, F. J.), Dermatoglyphics of the Hadza of Tanzania. *Human Biology*, 44 (1972), 621–48.

BARNICOT, N. A., HEWETT-EMMETT, D., Red cell and serum proteins of Cercocebus, Presbytis, Colobus and certain other species. *Folia primat.*, 17 (1972), 442–57.

BURNHAM, P. C., Racial classification and identity in the Meiganga Region: North Cameroon. *Race and Social Difference*, ed. Paul Baxter and Basil Sansom. Harmondsworth: Penguin Books, 1972, 301–18.

COLEMAN, D. A., Marriage movement in British cities. *Genetic Variation in Britain*, ed. D. F. Roberts and E. Sunderland. London: Taylor and Francis, 1973, 35–57.
A geography of marriage. *New Society*, 23 (1973), 634–6.

DAVID, N. C., An archaeological reconnaissance in Cameroon and a preliminary report on the site of Nassarao I. *Actes 6th Congrès Panafricain de Préhistoire, Dakar, 1967*, (1972), 307–8.

DOUGLAS, MARY, *Natural Symbols* (rev. ed.), Harmondsworth: Penguin Books, 1973. 219 pp.
Editor, *Rules and Meanings: the Anthropology of Everyday Knowledge.* Penguin Modern Sociology Readings. Harmondsworth: Penguin Books, 1973, 319 pp.
Self-evidence. *Proc. roy. Anthrop. Inst.* 1972, (1973), 27–43. (Henry Meyers Lecture 1972.)

KUPER, A. J., *Anthropologists and Anthropology: the British school 1922–72*. London: Allen Lane, 1973. 253 pp.
Preface. *Steps to an Ecology of Mind*, ed. Gregory Bateson. London: Paladin, 1973, 9–16.

MARTIN, R. D., A laboratory breeding colony of the Lesser Mouse Lemur. *Breeding Primates*, ed. W. I. B. Beveridge, Basle: S. Karger, 1972, 161–71.
Adaptive radiation and behaviour of the Malagasy Lemurs. *Phil. Trans.*, B, 264 (1972), 295–352.

ARCHAEOLOGY

JOHNSTON, A. W., Sostratos rehabilitated. *Parola del Passato*, 27 (1972), 416–23.

EGYPTOLOGY

DAWSON, W. R., UPHILL, E. P., *Who was Who in Egyptology*. (2nd revised ed.) London: Oxford University Press, xiv+315 pp; 1 pl.

FAULKNER, R. O., Coffin texts spell 313. *J. Egyptian Arch.*, 58 (1972), 91–4.

SMITH, H. S., The rock inscriptions of Buhen. *J. Egyptian Arch.*, 58 (1972), 43–82, pls. xx–xxvi, figs. 1–12.

UPHILL, E. P., A bibliography of Sir William Matthew Flinders Petrie (1853–1942). *J. Near Eastern Studies*, 31 (1972), 356–79.

The bibliography of Walter Bryan Emery (1903–1971). *J. Egyptian Arch.*, 58 (1972), 296–9.

ENGLISH LANGUAGE AND LITERATURE

FENDER, S. A., Entries on Joel Barlow, Anne Bradstreet, Michael-Guillaume Crevecoeur, Philip Freneau, Edward Taylor, John Trumbull, and Michael Wigglesworth. *Webster's New World Companion to English and American Literature*, ed. Arthur Pollard. London: Compton Russell; New York: World Publishing Co., 1973.

HULME, HILDA, M., Review of *The Oxford Dictionary of English Proverbs* (3rd revised ed.). *English Studies*, 54 (1973), 83–5.

KERMODE, J. F., *Lawrence*. London: Fontana, 1973. 156 pp.

Novel and Narrative. University of Glasgow, 1973. 28 pp. (W. P. Ker Memorial Lecture.)

(with Hollander, John), Editors, *The Oxford Anthology of English Literature*. New York: Oxford University Press, 1973. vol. I, xxx+2376 pp; vol. II, xxxi+2236 pp.

MASON, M. Y., *In Memoriam*: the dramatization of sorrow. *Victorian Poetry*, x (1972), 161–77.

QUIRK, R., *The English Language and Images of Matter*. London: Oxford University Press, 1972. ix+136 pp.

Speech Therapy Services. Report of the Committee of Enquiry. London: H.M.S.O., 1972. 135 pp.

(with Greenbaum, S., Leech, G., Svartvik, J.), *A Grammar of Contemporary English*. London and Harlow: Longman and Seminar Press, 1972. xxi+1120 pp.

SUTHERLAND, J. A., Editor, with intro. and notes, Anthony Trollope, *Phineas Finn*. Harmondsworth: Penguin Books, 1972. 746 pp.

Tom's Garland: Hopkins' political poem. *Victorian Poetry*, 10 (1972), 111–21.

A plan for *Vanity Fair*. *The Princeton University Library Chronicle*, xxxiv (1972), 27–32.

Thackeray's 'Before the Curtain'. *Notes and Queries*, 19 (1972), 408.

WALKER, K., The novel: general works. 1. Bibliographies. 2. Histories and studies. *The New Cambridge Bibliography of English Literature*, vol. 4, *1900-1950*, ed. I. R. Willison. Cambridge University Press, 1972, cols 381–96.

Johnson and the state of common life. *Times Lit. Suppl.*, No. 3685 (1972), 1241–3.

Boswell's escape-route: from Edinburgh to London. *Ibid.*, No. 3707 (1973), 323–4.

WALKER, K., CHALKER, J., The eighteenth century. *The Year's Work in English Studies*, 1970, 51 (1972), 262–86.

FRENCH

BAKER, FELICITY, L'esprit de l'hospitalité chez Emile. *Romantisme*, 4 (1972), 90–9.

LAVERS, ANNETTE, La critique sauvage et le soupçon. *Psychanalyse et Sociologie*. Editions de l'Université de Bruxelles (conjointement avec L'Ecole Pratique des Hautes Etudes et l'Unesco), 1973, 51–75.

In the factory of the unconscious—on Deleuze-Guattari. *Times Lit. Supp.*, No. 3706 (1973), 295–6.

Barthes and the hedonism of reading. *Ibid.*, No. 3740 (1973), 713.

SCREECH, M. A., The sense of Rabelais's Enigme en prophétie. *Wege der Forschung, Sonderdruck aus Rabelais*. Darmstadt: Wissenschaftliche Buchgesellschaft, 1973, 213–18.

TANCOCK, L. W., Diderot: *The Nun*. Transl. with intro. by Leonard Tancock. Lithographs by Charles Mozley. London: The Folio Society, 1972. 168 pp.

Zola: *The Debacle*. Transl. with intro. by L. W. Tancock, London: Penguin Books. 1972. 509 pp.

On translating Zola. *Balzac and the Nineteenth Century. Studies in French Literature presented to Herbert J. Hunt*. Leicester University Press, 1972, 377–89.

TOOTILL, GWYNETH, Une édition inconnue et non complète des facecieux devis du Seigneur de la Motte Roullant, 1554. *Bibliothèque d'Humanisme et Renaissance, Travaux et Documents*, tome XXXV. Geneva: Droz, 1973, 303–9.

GEOGRAPHY

ADAMS, J. G. U., Life in a global village. *Environment and Planning*, 4 (1972), 381–94.

Concorde. *Ecologist*, 2 (1972), 16–17.

The measurement and interpretation of change in West African urban hierarchies. *African Urban Notes*, vi (1972), 43–55.

External linkages of national economics in West Africa. *Ibid.*, 97–116.

Propaganda for what? *Ecologist*, 3 (1973), 186–9.

Everything's under control. *Science for People* (April-May 1973), 4–6.

. . . and how much for your grandmother. *The Haltwhistle Quart.* (Spring 1973), 25–33.

BROWN, E. H., Temperate abnormality. *Geog. Mag.*, 45 (1973), 285–8.

(with Edgell, M. C. R.), Comparison of attitudes towards environmental quality and problems in Mildura, Victoria, and Broken Hill, N.S.W., Australia: a progress report. *International Geography 1972, 22nd Int. Congr., Montreal*, 1972 (1972), 633–85.

CARTER, F. W., *Dubrovnik (Ragusa) A Classic City-State*. London and New York: Seminar Press, 1972. 710 pp.

Dubrovnik at her zenith. *Geog. Mag.*, 44 (1972), 827–8.
Prague et la Bohème centrale: quelques problèmes de croissance. *Annales de Géographie*, 450 (1973), 165–92.
The industrial development of Prague 1800–1850. *Slavonic and East European Rev.*, L1 (1973), 243–75.

CLOUT, H. D., *Rural Geography: an Introductory Survey*. Oxford: Pergamon, 1972. 204 pp.
The Massif Central. Oxford University Press, 1973. 48 pp. (Problem Regions of Europe series.)
Two homes, one away. *Geog. Mag.*, 44 (1972), 98–102.
Editor, *Geographical Abstracts*: Series D: *Social Geography and Cartography*. Norwich: Clayton, 1972. 2305 abstracts, 704 pp.
(with Ash, J., Bass, M. A., Beven, K., Clayton, K. M., Hamilton, F. E. I.), *Geographical Abstracts: Index 1971* (*Sections A-D*). Norwich: Clayton, 1973. 1044 pp.
(with Bass, M. A., Board C.), *Geographical Abstracts*. Series D: *Social Geography and Cartography: Cumulative Index, 1966-70*. Norwich: Clayton, 1972. 800 pp.
(with Bass, M. A., Clarke, B. G., Clayton, K. M., Hauser, D. P., Yates, E. M.), *Geographical Abstracts: Index 1970* (*Sections A-D*). Norwich: Clayton, 1972. 844 pp.
(with Chaline, C.), Thamesmead: un type d'urbanisation volontaire. *La Vie Urbaine*, 4 (1971), 311–20.
(with Phillips, A. D. M.), Fertilisants minéraux en France au XIXe siècle. *Etudes Rurales*, 45 (1972), 9–28.

COOKE, R. U., A model of arroyos development in historical times. *Int. Géog. Cong. Colloque de Ouargla, 1971, Les Problèmes de Développement du Sahara Septentrional*, 2 (1972), 1–8.

COOKE, R. U., WARREN, A., *Geomorphology in Deserts*. London: Batsford, 1973. 416 pp.

GILBERT, A. G., Industrial locations theory: its relevance to an industrialising nation. *Spatial Aspects of Development*, ed. B. Hoyle. London: Wiley, 1973.
The economy of Colombia. *Investment in Colombia: The Political Climate*. London: Focus Research, 1973, 58–77.
Stagnant schooling in rural Colombia. *Geog. Mag.* 44 (1972), 8–12.

GLASS, RUTH, Anti-urbanism. *The City: Problems of Planning*, ed. M. Stewart. Harmondsworth: Penguin Books, 1972, 63–71.
The mood of London. *London: Urban Patterns, Problems, and Policies*, ed. D. Donnison and D. Eversley. London: Heinemann, 1973, 405–32.
The evaluation of planning: some sociological considerations. *A Reader in Planning Theory*, ed. A. Faludi. Oxford: Pergamon Press, 1973, 45–67.

HARRIS, D. R., Anglo-Saxon attitudes to geography. *The Bloomsbury Geographer*, 5 (1972), 3–7.
Swidden systems and settlement. *Warner Modular Publications Reprint*, 7 (1972), 1–18.
The ecology of swidden cultivation in the Upper Orinoco Rain Forest, Venezuela. *Ekistics*, 34 (1972), 150–4.

HARRISON, C. M. (with Harris, A., Smithson, P.), *Man's Environment*. London: Macdonald/Educational, 1972, 48 pp.

HOLLIS, G. E. (with Curtis, L. F.), The use of aerial photography in hydrology. *Proc. Instnt. civ. Engrs.*, 53 (1972), 679–80.

JOHNSON, J. H., *Stadsgeografi: en introduktion.* Stockholm: Wahlström and Widstrand, 1972. 220 pp.

JOHNSON, J. H., SALT, J., WOOD, P. A., Migration between labour market areas in England and Wales. *International Geography 1972,* ed. W. P. Adams and F. M. Helleiner. Toronto University Press, 1972, 1121–3.

LOWENTHAL, D., Editor, *Human Dimensions of Environmental Behavior. Environment and Behavior,* 4 (1972), 251–4. (Special issue.)

Research in environmental perception and behavior: perspectives on current problems. *Ibid.,* 333–42.

Some problems of identity in relation to resource perception. *Resource Development in the Caribbean.* Montreal: McGill University Centre for Developing Area Studies, 1972, 51–61.

Geography, experience, and imagination: towards a geographical epistemology. *Warner Modular Publications Reprint,* 123 (1973), 1–20.

(with Burton, Ian, Cooley, Richard, Mikesell, Marvin), Report of the AAG task force on environmental quality. *Professional Geographer,* xxv (1973), 39–47.

(with Comitas, Lambros), Editors, *West Indian Perspectives,* 4 vols. Garden City, New York: Anchor Press/Doubleday, 1973. 340, 422, 334, 422 pp.

(with Comitas, Lambros), Emigration and depopulation: some neglected aspects of population geography. *Warner Modular Publication Reprint,* 403 (1973), 1–16.

(with Riel, Marquita), *Publications in Environmental Perception.* New York: American Geographical Society, 1972.

No. 1. *Environmental Assessment: A Case Study of New York.* 37pp+6 pls.

No. 2. *Environmental Assessment: A Case Study of Boston.* 51 pp+7 pls.

No. 3. *Environmental Assessment: A Case Study of Cambridge, Massachusetts.* 50 pp+10 pls.

No. 4. *Environmental Assessment: A Case Study of Columbus, Ohio.* 41 pp+10 pls.

No. 5. *Environmental Assessment: A Comparative Analysis of Four Cities.* 68 pp.

No. 6. *Structures of Environmental Associations.* 27 pp.

No. 7. *Milieu and Observer Differences in Environmental Associations.* 37 pp.

No. 8. *Environmental Structures: Semantic and Experiential Components.* 48 pp.

LOWENTHAL, D., PRINCE, H. C., English landscape tastes. *Warner Modular Publication Reprint,* 114 (1973), 1–37.

MANNERS, G., Regional development with particular reference to Britain. *Studies in Human Geography,* ed. M. Chisholm and B. Rodgers. London: Heinemann for SSRC, 1972, 242–71.

(with Keeble, D., Rodgers, B., Warren, K.), *Regional Development in Britain.* London: Wiley, 1972. 448 pp.

MEAD, W. R., The changing rural scene, the natural provinces. *Finland, An Introduction,* ed. Sylvia Nickels, Hillar Kallas and Philippa Friedman. London: Allen and Unwin, 1973, 70–5, 87–128.

Scandinavia in Europe, a geographical interpretation. *Internationales Jahrbuch für Geschichts-und Geographie-Unterricht,* 13 (1970-71), 115–24.
Luminaries of the North. *Trans. Inst. Brit. Geogr.,* 57 (1972), 1–13.

MUNTON, R. J. C., Farm systems classification: a use of multivariate analysis. *Agricultural Typology and Land Utilisation,* ed. C. Vanzetty. Verona: Centre of Agricultural Geography, 1972, 89–108.

PRINCE, H. C., Georgian landscapes. *Man Made The Land,* ed. A. R. H. Baker and J. B. Harley. Newton Abbot: David and Charles, 1973, 153–66.

VITA-FINZI, C., Supply of fluvial sediment to the Mediterranean Sea during the last 20,000 years. *The Mediterranean Sea,* ed. D. J. Stanley and Y. Weiler. New York: Dowden, Hutchinson and Ross, 1973, 44–6.
(with Cornelius, P. F. S.), Cliff sapping by molluscs in Oman. *J. Sediment. Pet.,* 43 (1973), 31–2.
(with Falcon, N. L.), The Musandam (Northern Oman) Expedition 1971/1972. *Geog. J.,* 139 (1973), 1–19.
(with Higgs, E. S.), Prehistoric economies: a territorial approach. *Papers in Economic Prehistory,* ed. E. S. Higgs. Cambridge University Press, 1972, 27–36.
(with Smalley, I. J., Krinsley, D. H.), Crystalline overgrowths on quartz silt particles. *J. Geol.,* 81 (1973), 106–8.
(with Smalley, I. J., Krinsley, D. H.), Observations on the Kaiserstuhl Loess. *Geol. Mag.,* 110 (1973), 29–36.

WARREN, A., Some vegetation patterns in the republic of the Sudan—a discussion. *Geoderma,* 9 (1973), 75–8.
Minding the environment. *Area,* 5 (1973), 118–19.

WARREN, A., COOK, R. U., *Geomorphology in Deserts.* London: Batsford, 1973. 416 pp.

WOOD, P. A., (with Taylor, M. J.), Industrial linkage and local agglomeration in the West Midlands metal industries. *Trans. Inst. Brit. Geogr.,* 59 (1973).

GERMAN

BUTLER, G. P. G., Prospectus of the suicide society. *Times Lit. Suppl.,* No. 3682 (1972), 1144.
Forward with the gastropods. *Ibid.,* No. 3694 (1972), 1549.

CRICK, JOYCE, Decisions and revisions: Thomas and Heinrich Mann in 1914. *The Listener,* 89 (1973), 444–6.

FLAVELL, M. KAY, Goethe, Rousseau and the 'Hyp'. *Oxford German Studies,* 7 (1972-73), 1–23.

SCHWARZ, W., Studien zu Gottfrieds *Tristan. Festschrift für Ingeborg Schröbler zum 65. Geburtstag,* hrsg. von Dietrich Schmidtke und Helga Schüppert. Tübingen: Max Niemeyer Verlag, 1973, 217–37.

STERN, J. P., *On Realism.* London and Boston (U.S.A.): Routledge & Kegan Paul, 1973. 199 pp.
Manipulation durch das Klischee. *Sprache und Gesellschaft,* hrsg. von Annamaria Rucktäschel. München: Wilhelm Fink Verlag, 1972, 260–74.

WILKINSON, ELIZABETH M., Theologischer Stoff und dichterischer Gehalt in Fausts sogenanntem Credo. *Goethe und die Tradition,* ed. Hans Reiss. Frankfurt am Main: Athenaeum Verlag, 1972, 242–58.
Goethe's *Faust*: tragedy in the diachronic mode. *Publications of the English Goethe Society,* n.s. xlii (1972), 116–74.

GREEK

COLES, R. A., P. Fouad 63 revised. *Zeitschrift für Papyrologie und Epigraphik,* 9 (1972), 237–9.
Transcriptions of 21 Greek papyri. (P. Oxy. 2949, 2954–6, 2958–67, 2971, 2977–8, 2987–90.) *The Oxyrhynchus Papyri,* vol. XLI, ed. P. J. Parsons, J. R. Rea, and E. G. Turner. London: Egypt Exploration Society, 1972.

GRIFFITHS, A. H., Alcman's Partheneion: the morning after the night before. *Quaderni Urbinati di Cultura Classica,* xiv (1972), 7–30.
Reviews of the following:
D. M. Levin, *Apollonius' Argonautica re-examined: i* (Leiden, 1971). *J. Hellenic Studies,* 92 (1972), 203–5.
F. Buffière, *Anthologie grecque: i—Anthologie Palatine* (Paris, 1970). *Ibid.,* 211–12.

HOOKER, J. T., Reviews of the following:
J. Chadwick, S. Dow, *Cambridge Ancient History,* vol. 2, ch. 13. *J. Hellenic Studies,* 92 (1972), 225–6.
E. Masson, *Etude de vingt-six boules d'argile. Ibid.,* 243–4.

KELLS, J. H., Sophocles, *Electra* (Cambridge Greek and Latin Classics). Cambridge University Press, 1973. 255 pp.

LONG, A. A., Reviews of the following:
C. J. De Vogel, *Philosophia,* Pt. I. *Studies in Greek Philosophy. Philosophical Quarterly,* 22 (1972), 361–2.
J. Bollack, *Empédocle. Archiv für Geschichte der Philosophie,* 55 (1973), 76–9.
M. Untersteiner, *Posidonio nei placita di Platone secondo Diogene Laerzio. Classical Rev.,* lxxxvi (1972), 408–9.

REA, J. R., A lead tablet from Wanborough, Wilts. *Britannia,* 3 (1972), 363–7.
A note on Flavious Piso, praefectus Aegypti. *Zeitschrift für Papyrologie und Epigraphik,* 9 (1972), 243–4.
PSI XIV 1444 and Philip the Arabian. *Chronique d'Egypte,* 47 (1972), 236–42.
Transcriptions of 51 Greek papyri. (P. Oxy. 2892–2942.) *The Oxyrhynchus Papyri,* vol. XL, ed. P. J. Parsons, J. R. Rea, and E. G. Turner. London: Egypt Exploration Society, 1972.
Transcriptions of 2 Greek papyri. (P. Oxy. 2946–7). *Ibid.,* vol. XLI.

TURNER, E. G., *The Papyrologist at Work* (Greek, Roman and Byzantine Monographs, No. 6). Durham, North Carolina: Duke University, 1973, viii+52 pp; 8 pls.
Menander, *The Girl From Samos.* Transl. into English blank verse. London: Athlone Press, 1972. 48 pp.
Transcriptions of 3 Greek papyri. (P. Oxy. 2943–4, 2950.) *The Oxyrhynchus Papyri,* vol. XLI, ed. P. J. Parsons, J. R. Rea, and E. G. Turner. London: Egypt Exploration Society, 1972.

HEBREW AND JEWISH STUDIES

ABRAMSKY, C., A check list of labour periodicals 1794–1920 with a prefatory note. *Bull. Soc. Labour History,* 25 (1973), 30–9.
Jewish life in Poland and the U.S.S.R. *Soviet Jewish Affairs,* iii (1973), 126–8.

LIPMAN, V. D., England. *Jewish Art and Civilization,* vol. II, ed. G. Wigoder. Fribourg: Office du Livre, 1972, 8–51.
The development of London Jewry. *A Century of Anglo-Jewish Life,* ed. S. S. Levin. London: United Synagogue, 1973, 43–57.
Board of deputies. *Encyclopaedia Judaica,* vol. III, ed. C. Roth. Jerusalem: Keter, 1971, cols 1150–1.
Cohen family. *Ibid.,* vol. IV, cols 658–61.
England: modern period. *Ibid.,* vol. VI, cols 758–67.
Exchequer of the Jews. *Ibid.,* vol. VI, cols 1006–7.
Jews' College. *Ibid.,* vol. X, col 989.
Manchester. *Ibid.,,* vol. XI, cols 858–60 .
Montagu family. *Ibid.,* vol. XII, cols 264–5.
Montefiore, Sir Moses and family. *Ibid.,* vol. XII, cols 270–5.
Politics, England. *Ibid.,* vol. XIII, cols 811–12.
Roth, Cecil. *Ibid.,* vol. XIV, cols 326–8.
Rothschild, English line. *Ibid.,* vol. XIV, cols 340–2.
Samuel, first Viscount. *Ibid.,* vol. XIV, cols 797–800.
Tailoring: England. *Ibid.,* vol. XV, cols 811–12.

RAPOPORT, A. ALBERT, Confession in the Circle of R. Nahman of Braslav. *Bull. Inst. Jewish Studies,* vol. I, ed. S. Stein and N. Wieder. London: Institute of Jewish Studies, 1973, 65–96.

STEIN, S., WIEDER, N., Editors, *Bulletin of the Institute of Jewish Studies,* vol. I. London: Institute of Jewish Studies, 1973. 111 pp.

WIESENBERG, E., The judgement of Solomon. *NIB, Annual of Midrashiya of Pardes Hannah,* ed. Israel Sadan. Israel: Midrashiya, 1972–73, 39–50.

HISTORY

BETHELL, L. M., Entries relating to materials in the Reports of the Royal Commission on Historical Manuscripts. *A Guide to Manuscript Sources for the History of Latin America and the Caribbean in the British Isles,* ed. Peter Walne. London: Oxford University Press in collaboration with the Institute of Latin American Studies, 1973.
Latin America. *Ann. Bull. Historical Literature,* lvi (1973), 105–10.

BLAKEMORE, H., *Latin America* (4th revised ed., first publ. 1966). Oxford University Press, 1973. 128 pp.
Chile: the critical juncture? *The Year Book of World Affairs,* 27 (1973), 39–61.

BURNS, J. H., The rights of Man since the Reformation: an historical survey. *An Introduction to the Study of Human Rights,* ed. Sir Francis Vallat. London: Europa Publications, 1972, 16–30.
The Bentham Project. *Editing Texts of the Romantic Period,* ed. John D. Baird. Toronto: A. M. Hakkert for The Committee for the Conference on Editorial Problems, 1972, 73–87.

CHRISTIE, I. R., The historians' quest for the American Revolution.

Statesmen, Scholars and Merchants. Essays in Eighteenth-Century History presented to Dame Lucy Sutherland, ed. Anne Whiteman, J. S. Bromley and P. G. M. Dickson. Oxford: Clarendon Press, 1973, 181–201.

Review of J. Cannon, *The Fox-North Coalition: Crisis of the Constitution, 1782-1784. Studies in Burke and His Time,* 14 (1972-3), 93–5.

CLARKE, P. F., The end of laissez faire and the politics of cotton. *Historical J.,* xv (1972), 493–512.

Review of A. J. P. Taylor (ed.), *Lloyd George. A Diary by Frances Stevenson. English Historical Rev.,* lxxxviii (1973), 400–4.

CRAIG, R. S., Editor, *Maritime History,* vol. II. Newton Abbot: David and Charles, 1973. 243 pp.

Shipowning in the south-west in its national context, 1800–1914. *Transport and Shipowning in the Westcountry,* ed. H. E. S. Fisher and W. E. Minchinton. Exeter University Press, 1973, 33–48.

DAVIES, R. R., Thomas of Lancaster: a review article. *Welsh History Review,* vi (1972), 200–10.

HARTE, N. B., Rees's clocks watches chronometers and naval architecture: a note. *Maritime History,* iii (1973), 92–5.

HARTE, N. B., TIERNEY, D. J., List of publications on the economic and social history of Great Britain and Ireland published in 1971. *Economic History Rev.,* 2nd ser., xxvi (1973), 295–336.

HOLDSWORTH, C. J., Mystics and heretics in the Middle Ages: Rufus Jones reconsidered. *J. Friends' Historical Soc.,* 53 (1972), 9–30.

HUMPHREYS, R. A., *The Evolution of Modern Latin America.* New York: Cooper Square, 1973. 196 pp.

Foreword. *A Guide to Manuscript Sources for the History of Latin America and the Caribbean in the British Isles,* ed. Peter Walne. London: Oxford University Press in collaboration with the Institute of Latin American Studies, 1973.

HUMPHREYS, SARAH C., Reviews of the following:

Colin Renfrew, *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium B.C. Int. J. Naut. Archaeology,* 2 (1973), 218–19.

Ibid. Economic History Rev., 2nd ser., xxvi (1973), 358–60.

HURSTFIELD, J., *Freedom, Corruption and Government in Elizabethan England.* London: Jonathan Cape, 1973. 351 pp.

Editor, *The Historical Association Book of The Tudors.* London: Sidgwick and Jackson, 1973. 240 pp.

Personal and political biography: a note on Mary Tudor. *University of Newcastle (Australia) Historical J.,* ii (1972), 17–23.

JOHNSON, D. W. J., Three essays. *Great Europeans,* ed. John Canning. London: Souvenir Press, 1973, 13–22, 203–14, 473–85.

The importance of nationalism. *One for Sorrow, Two for Joy,* ed. Paul Barker. London: Allen & Unwin, 1972, 249–57.

Britain and France in 1940. *Trans. Roy. Hist. Soc.,* 5th ser., xxii (1972), 141–58.

Keele 21. *Universities Quart.,* 26 (1972), 504–9.

The French Communist Party. *New Society* (21 September 1972), 540–3.

Britain in Europe: odd man in. *Ibid.,* (28 December 1972), 726–8.

LYNCH, J., *The Spanish American Revolutions* 1808-1826. London: Weidenfeld and Nicolson, 1973. 433 pp.

The British Museum. *A Guide to Manuscript Sources for the History of Latin America and the Caribbean in the British Isles,* ed. Peter Walne. London: Oxford University Press in collaboration with the Institute of Latin American Studies, 1973, 57–123.

MOMIGLIANO, A. D., Premesse per una discussione su Wilamowitz. *Rivista Storica Italiana,* lxxxiv (1972), 746–55.

Gaetano De Sanctis e Augusto Rostagni. *Cinque Studi su A. Rostagni.* Torino: Bottega d'Erasmo, 1972, 13–26.

National versions of an international phenomenon. The History of Ideas —2. *Times Lit. Suppl.,* No. 3690 (1972), 1417–18.

La caduta senza rumore di un impero. *Rivista Storica Italiana,* lxxxv (1973), 1–18.

Reviews of the following:

P. Janni, *La cultura di Sparta arcaica. Rivista Storica Italiana,* lxxxiv (1972), 822–3.

R. Syme, *Emperors and Biography. English Historical Rev.,* lxxxviii (1973), 114–15.

MORGAN, D. A. L., The King's affinity in the polity of Yorkist England. *Trans. Roy. Hist. Soc.,* 5th ser., 23 (1973), 1–25.

MORRIS, J. R., *The Age of Arthur.* London: Weidenfeld and Nicolson, 1973. xviii+665 pp.

Eusebius' chronicle: the Irish fragments. *Bull. Inst. Classical Studies,* 19 (1972), 80–93.

PEARL, VALERIE, London's counter revolution. *The Interregnum: The Quest for Settlement 1640-60,* ed. G. E. Aylmer. London: Macmillan, 1972, 29–56.

Reviews of the following:

R. Latham and W. M. Matthews, Editors, *Diary of Samuel Pepys,* vols. 1–5. *History,* lviii (1973), 106–8.

Victoria County History of Middlesex, vol. I. *J. Ecclesiastical History,* xxiii (1973), 284–5.

SWART, K. W., Survey of recent Dutch historiography. *Acta Historiae Neerlandicae,* vi (1973), 191–200.

TAYLOR, A. J. P., Editor, with intro. *Off the Record.* London: Hutchinson, 1973. 397 pp.

TYACKE, N. R. N., Puritanism, Arminianism and Counter-Revolution. *The Origins of the English Civil War,* ed. C. Russell. London: Macmillan, 1973, 119–43.

WEDGWOOD, C. VERONICA, Oliver Cromwell. (Revised and augmented ed., first publ. 1939). London: Duckworth, 1973. 128 pp.

WRIGHT, E., *Washington and the American Revolution.* (First publ. 1957). London: Pelican Books, 1973. 206 pp.

Men with two countries. *The Development of a Revolutionary Mentality.* Washington: Library of Congress, 1972, 151–7.

Intro. and six essays. *Great Europeans,* ed. John Canning. London: Souvenir Press, 1973, 9–10, 285–96, 297–307, 350–63, 364–74, 423–34, 435–48.

ITALIAN

HALE, J. R., Editor, *Renaissance Venice*. London: Faber and Faber, 1973. 483 pp.

LEPSCHY, A. L., Reviews of the following:

G. Contini, *Letteratura italiana delle origini. Modern Language Rev.*, 67 (1972), 917–18.

T. Todorov, *Grammaire du Décaméron. Linguistics*, 95 (1973), 98–103.

LATIN

HORSFALL, N. M., Varro and Caesar: three chronological problems. *Bull. Inst. Classical Studies*, 19 (1972), 120–8.

SKUTSCH, O., A note on the Tibullan pentameter. *Bull. Inst. Classical Studies*, 17 (1972), 129–30.

BΩCECΘC, *C. Classical Quart.*, n.s., 23 (1973), 60.

SCHOOL OF LIBRARY, ARCHIVE, AND INFORMATION STUDIES

WATSON, A. G., A Varese Library-Stamp identified? *The Library*, 5th ser., xxviii (1973), 147–8.

Review of C. E. Wright, *Fontes Harleiani: a study of the sources of the Harleian Collection of Manuscripts in the British Museum. J. Soc. Archivists*, iv (1973), 603–9.

PHILOSOPHY

COHEN, G. A., Bourgeois and proletarians. *Marx's Socialism*, ed. S. Avineri. New York: Lieber-Atherton, 1973, 101–25.

HONDERICH, TED, Editor, *Essays on Freedom of Action*. London: Routledge & Kegan Paul, 1973. 215 pp.

One determinism. *Essays on Freedom of Action*. ed. Ted Honderich. London: Routledge & Kegan Paul, 1973, 185–215.

Appraisals of political violence. *Issues in Law and Morality*, ed. N. S. Care and T. Trelogan. Cleveland, Ohio: Case Western Reserve University Press, 1973, 3–33.

Reply to Professor Pincoffs. *Ibid.*, 47–52.

Democratic violence. *Philosophy and Public Affairs*, 2 (1973), 190–214.

ISHIGURO, HIDÉ, *Leibniz's Philosophy of Logic and Language*. London: Duckworth; Ithaca, N.Y.: Cornell University Press, 1972. 165 pp.

WATLING, J. L., Hampshire on freedom. *Essays on Freedom of Action*, ed. Ted Honderich. London: Routledge & Kegan Paul, 1973, 15–29.

Causes or reasons? Review discussion of *Explanation in the Behavioural Sciences: Confrontations*, ed. R. Borger and F. Cioffi. *Inquiry*, 16 (1973), 101–11.

WOLLHEIM, RICHARD, John Stuart Mill and the limits of state action. *Social Research*, 40 (1973), 1–30.

PHONETICS AND LINGUISTICS

ABBERTON, EVELYN, Visual feedback and intonation learning. *Proc. 7th Int. Congr. Phonet. Sci.*, ed. A. Rigault and R. Charbonneau. The Hague: Mouton, 1972, 813–19.

Some laryngographic data for Korean stops. *J. Int. Phonet. Ass.*, 2 (1972), 67–78.

ARNOLD, G. F., TOOLEY, OLIVE M., *Say It With Rhythm, 3.* London: Longman, 1973. xi+119 pp.

FOURCIN, A. J., Perceptual mechanisms at the first level of speech processing. *Proc. 7th Int. Congr. Phonet. Sci.*, ed. A. Rigault and R. Charbonneau. The Hague: Mouton, 1972, 48–62.

Noise resistant larynx synchronous speech processing. *Proc. Brit. acoust. Soc.*, 2 (1973), Paper No. 73SHBI.

FRY, D. B., French listeners and the tonic accent. *Papers in Linguistics and Phonetics to the Memory of Pierre Delattre*, ed. A. Valdman. The Hague: Mouton, 1972, 201–8.

GIMSON, A. C., Phonology and the lexicographer. *Ann. N.Y. Acad. Sci.*, 211 (1973), 115–21.

GOLDMAN-EISLER, FRIEDA, Pauses, clauses, sentences. *Language and Speech*, 15 (1972), 103–13.

What should be the methods in psycholinguistics? *Linguistics*, 89 (1972), 68–73.

La mesure des pauses: un outil pour l'étude des processus cognitifs dans la production verbale. *Bull Psychol.*, 26 (1972/73), 383–90.

HUDSON, R. A., An exercise in linguistic description. *Language at Work*, ed. G. Thornton, D. Birk and R. A. Hudson. London: Longman, 1972, 57–101.

An 'Item-and-Paradigm' approach to Beja syntax and morphology. *Foundations of Language*, 9 (1973), 504–48.

Syllables, moras and accents in Beja. *J. Linguistics*, 9 (1973), 53–63.

Tense and time reference in reduced relative clauses. *Linguistic Inquiry*, 4 (1973), 251–6.

O'CONNOR, J. D., *Phonetic Drill Reader*. London: Cambridge University Press, 1973, 59 pp.

O'CONNOR, J. D., ARNOLD, G. F., *Intonation of Colloquial English*, 2nd ed. London: Longman, 1973. x+288 pp.

WASON, P. C., In real life negatives are false. *Negation*, ed. L. Apostel. Leuven: Editions Nauwelaerts, 1972, 17–38 (reprint).

Are there rules for writing English? *ICL Lectures on Technical Communication*. Cardiff: University of Wales Institute of Science and Technology, 1973, 55–79.

WELLS, J. C., On phonological adaptation. *Proc. 7th Int. Congr. Phonet. Sci.*, ed. A. Rigault and R. Charbonneau. The Hague: Mouton, 1972, 803–6.

POLITICAL ECONOMY

BECKERMAN, W., Environmental policy: the contribution of economics. *O.E.C.D. Observer* (Oct. 1972), 34–7.

The myth of environmental catastrophe. *The National Review* (Nov. 1972), 1292–5.

Economists, scientists and environmental catastrophe. *Oxford Economic Papers,* 24 (1972), 327–44.

'Environment', 'needs' and real income comparisons. *Review of Income and Wealth,* 18 (1972), 333–9.

Human resources and economic development: some problems of measurement. *Int. Social Science J.,* xxiv (1972), 723–43.

(with Zuckerman, Lord), Minority Report to 3rd Report of Royal Commission on Environmental Pollution, Sept. 1972.

LAL, D. K., New economic policies for India. *Fabian Research Series,* 311 (1973), 1–32.

A suggested balance of payments policy for less developed countries (with particular reference to India). *Economia Internazionale,* xxv (1972), 1–22.

Disutility of effort, migration, and the shadow wage rate. *Oxford Economic Papers,* 25 (1973), 112–26.

Industry and trade. *Seminar* (Jan. 1973), 1–4.

Employment, income distribution and a poverty redressal index. *World Development,* 1 (1973), 121–5.

Economics of irrigation engineers. *Economic and Political Weekly,* viii, *Review of Agriculture* (June 1973), 53–5.

SAWYER, M. C., Concentration in British manufacturing industry: a reply. *Oxford Economic Papers,* 24 (1972), 438–47.

The earnings of manual workers: a cross-section analysis. *Scottish J. Political Economy,* 20 (1973), 141–57.

SPRAOS, J., The arbitrage function. *Le Change à Terme,* ed. P. Coulbois. Paris: Editions Cujas, 1972, 43–51.

An academic's view of the reconcilable and irreconcilable difference between the cambist and academic theories. *Ibid.,* 185–92.

SCANDINAVIAN STUDIES

BARNES, M. P., Draumkvæde—how old is it? *Scandinavica,* 11 (1972), 85–105.

Review of B. Alver, *Draumkvedet. Maal og minne* (1972), 82–92.

FOOTE, P. G., Editor, *The Saga of Grettir the Strong.* London: J. M. Dent & Sons, 1972. xxii+266 pp.

(with Palsson, Hermann, Slay, D.), Editors, *Proceedings of the First International Saga Conference, 1971.* London: Viking Society, 1973. viii+475 pp.

JONES, W. G., In love with the life-force. The epic poetry of William Heinesen. *Times Lit. Suppl.* (1973), 245.

PETHERICK, KARIN, Amerika i Hjalmar Bergmans författarskap. *Hjalmar Bergman Samfundets Årsbok* (1972), 71–103.

Literary style: a symposium. *Samlaren,* 93 (1972), 305–8.

WILSON, D. M. (with Moorhouse, S.), Medieval Britain in 1970. *Medieval Archaeology*, 15 (1971), 124–79.
(with Small, A., Thomas, A. C.), *St Ninian's Isle and its Treasure*, 2 vols. London: Oxford University Press, 1973. 193 pp; 57 pls.

FACULTY OF LAWS

BROWN, E. D., British fisheries and the Common Market. *Current Legal Problems*, 25 (1972), 37–73.
The U.N. conference on the law of the sea: a progress report. *Ibid.*, 26 (1973), 131–65.
Iceland's fishery limits: the legal aspect. *The World Today*, 29 (1973), 68–80.

BUTLER, W. E., Editor, with intro., P. P. Shafirov, *A Discourse Concerning the Just Causes of the War Between Sweden and Russia: 1700-1721*. Dobbs Ferry, N.Y.: Oceana Publications, 1973. 325 pp.
Ten reviews. *The Foreign Affairs 50-Year Bibliography: New Evaluations of Significant Books on International Relations 1920-1970*, ed. B. Dexter. New York and London: R. R. Bowker, 1972, 139, 147–9.
Soviet concepts of aggression. *A Treatise on International Criminal Law*, vol. I, ed. M. Cherif Bassiouni and V. P. Nanda. Springfield, Illinois: C. C. Thomas, 1973, 182–97.
The legal dimension of Soviet maritime policy. *Soviet Naval Developments: Context and Capability*, ed. M. MacGuire. Halifax: Dalhousie University, 1973, 98–109. Soviet conservation law: land, water, and forestry. *Soviet Statutes and Decisions*, ix (1972/73), 1–412.
Soviet maritime jurisdiction in the Arctic. *The Polar Record*, xvi (1972), 418–21.
Soviet maritime law and policy in perspective. *The World Today*, xxviii (1972), 457–66; translated as Seerechts und Meerespolitik der Sowjetunion. *Europa Archiv.*, xix (1972), 673–82.
New directions in the law of the sea. *Ocean Science News*, xv (1973), No. 7, 1–2; No. 8, 4–5.
New marketing horizons: the Russian-Soviet law microfiche project. *Microform Rev.*, ii (1973), 23–6; reprinted in *Microfiche Communique*, ii (1973), 5–8.
Translator, U.S.S.R. emigration edict and decree. *Int. Legal Materials*, xii (1973), 427–30.

CADWALLADER, F. J. J., The shipowner's indemnity. II. Orders as to employment. *J. Business Law* (1972), 286–96.
U.K. shipping law 1971. *J. Maritime Law and Commerce* (1973), 255–94.
The salvor's duty of care. *Maritime Studies and Management* (July 1973), 3–16.
A changing law of the sea. *Safety at Sea International* (July 1973), 30–2.
(with Schmitthoff, C. M.), The development of a combined transport document. *Il Diritto Marittimo* (Sept. 1972), 140–60.

CHENG, B., Air and space law. *Report 54th Conf. Int. Law Assoc. 1970*. London: International Law Association, 1971, 299–302, 312–15, 418–19, 939–41.

The Hague Convention on hijacking of aircraft 1970—the legal aspects. *Aeronautical J.*, 76 (1972), 529–35.

The internationalisation of INTELSAT. *Further Outlook on Space,* 15 (1972), 12–15.

FREEMAN, M. D. A., Matrimonial Proceedings (Polygamous Marriages) Act 1972. *Current Law Statutes Annotated,* ed. Clifford Walsh. London: Sweet & Maxwell, 1972, 1–5.

Standards of adjudication, judicial lawmaking, and prospective overruling. *Current Legal Problems,* 26 (1973), 166–207.

GROOM, A. J. R. (with Boardman, R.), Editors, *The Management of Britain's External Affairs.* London: Macmillan, 1973. 382 pp.

HOLLAND, W., *Cracknell's Law Students' Companion. Constitutional Law and English Legal System* (3rd ed.). London: Butterworth, 1973. 217 pp.

IVAMY, E. R. H., *Fire and Motor Insurance* (2nd ed.). London: Butterworth, 1973. 498 pp.

Personal Accident, Life and Other Insurances. London: Butterworth, 1973. 389 pp.

Maritime law. *Annual Survey of Commonwealth Law, 1971.* London: Butterworth, 1972, 401–16.

Supplement to Topham and Ivamy's *Company Law* (14th ed., 1970). London: Butterworth, 1973. 8 pp.

KORAH, V., Monopolies and restrictive practices. *Bibliographical Guide to the Law of the U.K.* (2nd ed.), ed. A. G. Chloros. London: Institute of Advanced Legal Studies, 1973, 113–19.

Restrictive trade practices. *J. Business Law* (1972), 319–33; (1973), 62–4, 178–84.

Dividing the Common Market through national industrial property rights. *Modern Law Rev.,* 35 (1972), 634–43.

Concerted practices. *Ibid.,* 36 (1973), 220–6.

The control of mergers under Article 86 of the Rome Treaty: Continental can. *Current Legal Problems,* 26 (1973), 82–113.

LLOYD OF HAMPSTEAD, LORD, *The Idea of Law* (4th revised issue). London: Penguin Books, 1973. 363 pp.

Jurisprudence. *Bibliographical Guide to the Law of the U.K.* (2nd ed.), ed. A. G. Chloros. London: Institute of Advanced Legal Studies, 1973, 253–6.

MILLNER, M. A., Growth and obsolescence in negligence. *Current Legal Problems,* 26 (1973), 260–80.

OAKLEY, A. J., Has the constructive trust become a general equitable remedy? *Current Legal Problems,* 26 (1973), 17–39.

RIDEOUT, R. W., *The Practice and Procedure of The National Industrial Relations Court.* London: Sweet and Maxwell, 1973. xvi+94 pp.

Trade Unions and the Law. London: Allen and Unwin, 1973. 276 pp.

When is a rule not a rule? *Modern Law Rev.,* 36 (1973), 73–8.

RYDER, E. C., Hotchpot on partial intestacy. *Current Legal Problems,* 26 (1973), 208–22.

SCAMELL, E. H., Recent cases in the law of partnership, classification of cases. *Current Legal Problems,* 26 (1973), 223–40.

SCHWARZENBERGER, G., *Civitas Maxima?* Tuebingen: J. C. B. Mohr (Paul Siebeck), 1972. 45 pp.

Recht und Ordnung. *Multitudo legum—Ius unum* (Festschrift fuer Wilhelm Wengler). Berlin: Interrecht, 1973, 525–35.
The Nemo Judex in sua causa maxim in international judicial practice. *Anglo-American Law Rev.*, 1 (1972), 482–98.
The problem of functional incompatibilities before international courts. *Year Book of World Affairs*, 27 (1973), 434–49.
European common law. *Current Legal Problems*, 26 (1973), 114–30.

THOMAS, J. A. C., *Locare Usumfructum. Irish Jurist*, 6 (1972), 365–71.
D.19.2.35.1. *Bullettino dell'Istituto di Diritto Romano* (3rd ser.), 13 (1973), 83–8.
Institutes 2.1.41 and the passage of property on sale. *South African Law J.*, 90 (1973), 150–9.
(with Smith, J. C.), *A Casebook on Contract*. London: Sweet and Maxwell, 1973. 592 pp.

FACULTY OF SCIENCE

ANIMAL GENETICS

DEOL, M. S., X-chromosome inactivation: does it occur at the same time in all cells of the embryo? *Nature, New Biol.*, 240 (1972), 277–9.
Chimaeras and the forbidden-clone theory of self-tolerance. *Ibid.*, 242 (1973), 469.
(with Guillery, R. W., Scott, G. L., Cattanach, B. M.), Genetic mechanisms determining the central visual pathways of mice. *Science*, 179 (1973), 1014–16.
(with Whitten, W. K.), Time of X chromosome inactivation in retinal melanocytes of the mouse. *Nature, New Biol.*, 238 (1972), 159–60.

GRÜNEBERG, H., A ganglion probably belonging to the N. terminalis system in the nasal mucosa of the mouse. *Z. Anat. Entwickl.-Gesch.*, 140 (1973), 39–52.
(with Cattanach, B. M., McLaren, A., Wolfe, H. G., Bowman, P.), The molars of tabby chimaeras in the mouse. *Proc. roy. Soc., B.*, 182 (1972), 183–92.
(with McLaren, A.), The skeletal phenotype of some mouse chimaeras. *Proc. roy. Soc.*, B, 182 (1972), 9–23.

HUNT, D. M., JOHNSON, D. R., An inherited deficiency in noradrenaline biosynthesis in the brindled mouse. *J. Neurochem.*, 19 (1972), 2811–19.

BOTANY AND MICROBIOLOGY

AHMED, N., SMITH, D. G., ROWBURY, R. J., The effect of growth medium on the division of a filament-forming mutant of *Salmonella typhimurium*. *Microbios*, 7 (1973), 221–30.

BELL, P. R., Nucleocytoplasmic interaction in the eggs of *Pteridium aquilinum* maturing in the presence of thiouracil. *J. Cell Sci.*, 11 (1972), 739–55.

(with Duckett, J. G.), Studies on fertilization in archegoniate plants. II. Egg penetration in *Pteridium aquilinum* (L.) Kuhn. *Cytobiologie,* 6 (1972), 35–50.

BELL, P. R., CAVE, CELIA, F. (with Jayasekera, R. D. E.), The effect of thiouracil on the cytochemistry of the egg of *Pteridium aquilinum. Cytobiologie,* 6 (1972), 253–60.

BROWN, P. R. (with Smyth, M. J., Clarke, Patricia H., Rosemeyer, M. A.), The subunit structure of the aliphatic amidase from *Pseudomonas aeruginosa. Eur. J. Biochem.,* 34 (1973), 177–87.

CAVE, CELIA, F., BELL, P. R., The cytochemistry of the walls of the spermatocytes of *Ceratopteris thalictroides. Planta (Berl.),* 109 (1973), 99–104.

(with Schedlbauer, M. D.), The incorporation of DL–[3—^{14}C] cysteine during spermatogenesis in *Ceratopteris thalictroides. J. Cell Sci.,* 12 (1973), 765–79.

CHALONER, W. G., Devonian plants from Fair Isle, Scotland. *Rev. Palaeobotany & Palynology,* 14 (1972), 49–61.

(with Mortimer, Margaret), Palynology of the concealed Devonian rocks of Southern England. *Bull. Geol. Surv. Gt. Brit.* 39 (1972), 1–56.

COKER, ANNABEL M. (with Coker, P. D.), Some practical details of the use of pressure sensitive counters. *Recreation News Suppl.,* 7 (1972), 14–17.

(with Coker, P. D.), A multi-digital event recorder: some possible applications. *J. Appl. Ecol.,* 9 (1972), 767–70.

(with Coker, P. D.), A simple method of time lapse photography for use in recreation studies. *Recreation News Suppl.,* 8 (1973), 31–8.

DICKINSON, H. G., BELL, P. R., The role of the tapetum in the formation of sporopollenin-containing structures during microsporogenesis in *Pinus banksiana. Planta (Berl.),* 107 (1972), 205–15.

The identification of sporopollenin in sections of resin-embedded tissues by controlled acetolysis. *Stain Technol.,* 48 (1973), 17–22.

ELLIS, J. R. (with Matfield, B.), The allopolyploid origin and genomic constitution of *Potentilla anglica. Heredity,* 29 (1972), 315–27.

FOWDEN, L., Amino acids. *Phytochemistry,* 11 (1973), 1–25.

(with Ito, K.), New characterisations of amino acids and γ-glutamyl peptides from *Acacia georginea* seed. *Phytochemistry,* 11 (1972), 2541–5.

(with Lea, P. J., Norris, R. D.), Amino acid analogues and protein synthesis in plants. *Symp. Biol. Hung.,* 13 (1972), 137–45.

(with Mazelis, M.), Relationship of endogenous substrate to specificity of S-alkyl cysteine lyases of different species. *Phytochemistry,* 12 (1973), 1287–9.

(with Murakoshi, I., Kato, F., Haginiwa, J.), Enzyme synthesis of 2-alanyl-3-isoxazolin-5-one from *O*-acetylserine and isoxazolin-5-one by *Pisum* seedling extracts. *Chem. Pharm. Bull. (Tokyo),* 21 (1973), 918–20.

(with Norris, R. D.), Substrate discrimination by prolyl-tRNA synthetase from various higher plants. *Phytochemistry,* 11 (1972), 2921–35.

(with Pratt, Helen M.), Cyclopropylamino acids of the genus *Acer*: distribution and biosynthesis. *Ibid.,* 12 (1973), 1677–82.

(with Pratt, Helen M., Smith, A.), Nitrogenous constituents of *Billia hippocastanum* and *Acer pseudopletanus. Ibid.,* 11 (1972), 3521–3.

(with Pratt, Helen, M., Smith, A.), 4-Hydroxyisoleucine from seed of Trigonella *foenum-graecum*. *Ibid.*, 12 (1973), 1070–12.

(with Srivastava, G. C.), The effect of growth temperature on enzyme and amino-acid levels in wheat plants. *J. exp. Bot.*, 23 (1972), 921–9.

(with Splittstoesser, W. E.), Ornithine transaminase from *Cucurbita maxima* cotyledons. *Phytochemistry*, 12 (1973), 785–90.

(with Watson, R.), Amino acids of *Caesalpinia tinctoria* and some allied species. *Phytochemistry*, 12 (1973), 617–22.

GOLDSMITH, F. B., Vegetation mapping in upland areas and the development of conservation management plans. *The Use of Aerial Photography in Countryside Research, Countryside Commission* (1972), 18–24.

The role of the ecologist in development for tourism: a case-study in the Caribbean. *Discussion Papers in Conservation, U.C.L.* 3 (1972).

GREWAL, M., ELLIS, J. R., Sex determination in *Potentilla fruticosa*. *Heredity*, 29 (1972), 359–62.

LEA, P. J., NORRIS, R. D., tRNA and aminoacyl-tRNA synthetases from plants. *Phytochemistry*, 11 (1972), 2897–920.

LEWIS, D., DICKINSON, H. G., Cytochemical and ultrastructural differences between intraspecific compatible and incompatible pollinations in *Raphanus*. *Proc. R. Soc. Lond.*, B, 183 (1973), 21–38.

MORRIS, I. (with Joint, I. R., Fuller, R. C.), Purification of a complex of alkaline fructose-1, 6-bisphosphatase and phosphoribulokinase from *Rhodospirillum rubrum*. *J. Biol. Chem.*, 247 (1972), 4833–8.

(with Joint, I. R., Fuller, R. C.), Possible regulatory characteristics of the fructose diphosphatase-phosphoribulokinase complex from *Rhodospirillum rubrum*. *Biochim. biophys. Acta.*, 276 (1972), 333–7.

(with Slater, J. H.), Phctosynthetic carbon dioxide assimilation by *Rhodospirillum rubrum*. *Arch. Mikrobiol.*, 88 (1973), 213–23.

(with Yentsch, C. S.), A new method of concentrating phytoplankton. *Limnol. Oceano.*, 17 (1972), 490–3.

ROWBURY, R. J., Bacterial cell division; its regulation and relation to DNA synthesis. *Sci. Prog. Oxf.*, 60 (1972), 169–88.

SHANNON, K. P., SPRATT, B. G., ROWBURY, R. J., Cell division and the production of cells lacking nuclear bodies in a mutant of *Salmonella typhimurium*. *Molec. gen. Genet.*, 118 (1972), 185–97.

SMITH, D. G., The *Proteus* swarming phenomenon. *Sci. Prog. Oxf.*, 60 (1972), 487–506.

(with Baker, J. H.), The bacteria in an antarctic peat. *J. Appl. Bact.*, 35 (1972), 589–96.

(with Gross, V. J.), The effect of nalidixic acid on growth and petite formation in *Saccharomyces cerevisiae*. *Microbios*, 6 (1972), 139–46.

(with Svoboda, A.), Inhibitory effect of 2-deoxy-glucose on cell wall synthesis in cells and protoplasts of *Schizosaccharomyces pombe*. *Zeitschrift für Allg. Mikrobiologie*, 12 (1972), 685–99.

SMITH, D. G., WILKIE, D., SRIVASTAVA, K. C., Ultrastructural changes in mitochondria of zygotes in *Saccharomyces cerevisiae*. *Microbios*, 6 (1972), 231–8.

SPRATT, B. G., Replication of extrachromosomal elements in a DNA synthesis initiation mutant of *Salmonella typhimurium*. *Biochem. biophys. Res. Commun.*, 48 (1972), 496–501.

SPRATT, B. G., ROWBURY, R. J. (with Meynell, G. G.), The plasmid of

Salmonella typhimurium LT2. *Molec. gen. Genet.*, 121 (1973), 347–53.

STONE, A. B., Histidine starvation and completion of the bacterial deoxyribonucleic acid replication cycle. *Molec. gen. Genet.*, 119 (1972), 267–76.

STRANGE, R. N., Plants under attack. *Sci. Prog. Oxf.*, 60 (1972), 365–85.

(with Majer, J. R., Smith, H.), Identification of betaine and choline in anthers as the two fungal growth stimulants which explain the susceptibility of wheat to *Fusarium graminearum* at flowering. *J. gen. Microbiol.*, 73 (1972), xviii.

TAYLOR, K. (with Marks, T. C.), The mineral nutrient status of *Rubus chamaemorus* L. in relation to burning and sheep grazing. *J. appl. Ecol.*, 9 (1972), 501–11.

TRISTRAM, H., Some aspects of the regulation of amino acid biosynthesis in bacteria. *Biosynthesis and its Control in Plants.* ed. B. V. Milborrow. London: Academic Press, 1973, 21–48.

WILKIE, D., Genetic aspects of mitochondria. *Mitochondria and Biomembranes.* Amsterdam: North Holland, 1972, 85–94.

(with Rhodes, P. M.), Inhibitory effects of daunomycin on mitochondrial synthesis in *Saccharomyces cerevisiae. Heredity,* 26 (1971), 347.

(with Rhodes, P. M.), Antimitochondrial activity of lampren in *Saccharomyces cerevisiae. Biochem. Pharmacol.*, 22 (1973), 1047–56.

(with Thomas, D. Y.), Zygote cell lineages in the study of mitochondrial recombination. *Heredity,* 28 (1972), 278.

(with Thomas, D. Y.), Mitochondrial genetic analysis by zygote cell lineages in *Saccharomyces cerevisiae. Genetics,* 73 (1973), 367–77.

WILKIE, D., EVANS, I., LINSTEAD, D., Inhibition of RNA synthesis in mitochondria by daunomycin. *Biochem. biophys. Acta.*, 312 (1973), 323–36.

WILKIE, D., LINSTEAD, D., Effects of mitochondrial modifications on cellular toxicity of chlorimipramine in *Saccharomyces cerevisiae. Heredity,* 30 (1973), 259.

CHEMISTRY

ANDERSON, J. E. (with Franck, R. W., Mandella, W. L.), Peri interactions in some 1, 8-di-tert-butylnaphthalene compounds. Rotation and flipping of the *tert*-butyl groups. *J. Amer. chem. Soc.*, 93 (1972), 4608–14.

ANDERSON, J. E., PEARSON, H., Secondary steric effects on barriers to rotation in substituted ethanes. *Chem. Comms.*, No. 15 (1972), 908–9.

ANDERSON, J. E., PEARSON, H., RAWSON, D. I., Electronic and steric effects on hindered rotation about phenyl-carbon bonds. *Chem. Comms.*, No. 3 (1973), 95–6.

ANDERSON, S. N., BALLARD, D. H., CHRZASTOWSKI, J. Z., DODD, D., JOHNSON, M. D., Inversion of configuration in the nucleophilic displacement of cobalt from alkylcobalt(IV) complexes and its relevance to the halogenation of the corresponding alkylcobalt(III) complexes. *Chem. Comms.*, No. 11 (1972), 685–6.

ANDERSON, S. N., FONG, C. W., JOHNSON, M. D., Oxidatively induced carbonyl insertion and nucleophilic cleavage reactions of alkylmetal carbonyl compounds. *Chem. Comms.*, No. 5 (1973), 163.

BAKER, R. W., CHOTHIA, C., PAULING, P. J. (with Weber, H. P.), Molecular structure of LSD. *Science*, 178 (1972), 614–15.
Molecular structure of hallucinogenic substances: lysergic acid, diethylamide, psilocybin, and 2,4,5-trimethoxyamphetamine. *Molec. Pharmacology*, 9 (1973), 23–32.
BAKER, R. W., GARRATT, P. J., NICOLAOU, K. C., SONDHEIMER, F., Diastereomeric monocyclic diallenes. The stereochemistry of formation of racemic and meso-3,4,9,10-cyclodecatetraene-1,7-dione. *Tetrahedron Letters* (1972), 3425–8.
BAKER, R. W., JONES, G. P., PAULING, P. J., Substructure search of the crystal data file. *Nature, Lond.*, 242 (1973), 326–7.
BAKER, R. W., PAULING, P. J., Crystal structure of (pentafluorophenyl) (triphenylphosphine) gold(I). *J. chem. Soc., Dalton* (1972), 2264–6.
BANTHORPE, D. V., On the question of ring-protonation in the benzidine rearrangement. *Tetrahedron Letters* (1972), 2707–10.
(with Curtis, A., Fordham, W. D.), 9-Hydroxy and 9 oxo-derivatives of isolongifolene. *Ibid.* (1972), 3065.
(with Smith, B. V.), Rearrangements of carbonyl halides. *Chemistry of Carbonyl Halides*, ed. S. Patai. New York: Wiley-Interscience, 1972, 253–307.
(with Whittaker, D.), Chemistry of thujane derivatives. *Chem. Revs.*, 72 (1972), 305–23.
BANTHORPE, D. V., BAXENDALE, D., Model system of the biological oxidation of α thujene and sabinene. *Planta Med.*, 22 (1973), 190–210.
BANTHORPE, D. V., CHARLWOOD, B. V., Biosynthesis of terpenes. *Chemistry of Terpenoids*, ed. A. A. Newman. London: Academic Press, 1972, 337–81.
Catabolism of biosynthetic precursors in higher plants. *Planta Med.*, 21 (1972), 428–33.
BANTHORPE, D. V., DOONAN, HILARY, Terpene biosynthesis. Pt v. Interconversions of some monoterpenes in higher plants and their possible role as precursors of carotenoids. *J. chem. Soc. Perkin I* (1972), 1764–9.
BANTHORPE, D. V., GATFORD, C., Monoterpene patterns in thuja and juniper species. *Planta Med.*, 22 (1973), 64–70.
BANTHORPE, D. V., LE PATOUREL, G. N. J., The biosynthesis of (+)-α-pinene in *Pinus* species. *Biochem. J.*, 130 (1972), 1055–61.
(with Francis, M. J. O.), Biosynthesis of geraniol and nerol and their β-D-glucosides in *Pelargonium graveolens* and *Rosa dilecta*. *Biochem. J.*, 130 (1972), 1045–54.
BANTHORPE, D. V. O'SULLIVAN, M., Mechanism of benzidine and semidine rearrangements. Pt XXVII. Kinetics, products and solvent isotope effects for acid-catalysed rearrangements of some *N*-substituted hydrazoarenes. *J. chem. Soc. Perkin II* (1973), 551–6.
BANTHORPE, D. V., WINTER, JUNE G., Rearrangement of aromatic N-nitroamines. Pt VII. The acid-catalysed transformation of *N*-methyl-*N*-nitro-9-aminoanthracene. *J. chem. Soc. Perkin II* (1972), 1259–63.
BANTHORPE, D. V., WIRZ-JUSTICE, ANN, Terpene biosynthesis. Pt VI. Monoterpenes and carotenoids from tissue cultures of *Tanacetum vulgare L.* *J. chem. Soc. Perkin I* (1972), 1769–72.
BARROETA, N., MACCOLL, A., The thermolysis of methane sulfinic acid sec-butyl ester. *Acta Cient. Venezolana*, 21 (1970), 195–7.

(with Cavassa, M., Congiu, L., Fava, A.), The gas-phase pyrolysis and the solvolysis of sec-butyl thiocyanate. Pt II. The solvolysis in dimethylformamide. *Gazetta Chimica Italiana,* 102 (1972), 467–90.

BARROW, MAIE-ANNE, RICHARDS, A. C. SMITHERS, R. H., HOFFMAN, H. M. R., Isobullatenone and a demethylated analog. A new route to 3(2H) furanones. *Tetrahedron Letters* (1972), 2101–2.

BEEBY, P. J., SONDHEIMER, F., The synthesis of aromatic bridged didehydroaza[17]annulenes bearing alkyl substituents within the cavity of the π-electron cloud. *Angew. Chem. Internat. Ed. Eng.,* 11 (1972), 833–4.

Synthesis of a methylene-bridged didehydroaza[21]annulene, a diatropic heteroannulene. *Ibid.,* 12 (1973), 410–11.

Synthesis of a methylene-bridged didehydroaza[19]annulene, a paratropic heteroannulene. The alternation of electromagnetic properties between hetero[$4n+1$] annulenes and hetero[$4n-1$]annulenes. *Ibid.* 12 (1973), 411–13.

BELFORD, ROSEMARY C. E., FENTON, D. E., TRUTER, MARY R., Reactions of 1,4-diazabicyclo[2,2,2]octane with bis-(1,1,5,5,5-hexafluoropentane-2,4-dionato)copper(II) and the crystal structure of the 1:1 complex. *J. chem. Soc. Dalton* (1972), 2208–13.

Reactions of *NNN'N'*-tetra-alkylethylenediamines with copper(II) halides and the crystal structure of bis(*NNN'N'*-tetra-ethylenediammonium)hexa-μ-chloro-μ_4-oxo-tetra[chlorocuprate(II)]. *Ibid.* (1972), 2345–50.

BEVAN, J. W., LEGON, A. C., Structure and potential energy function of cyclopent-3-enone. Pt I. Microwave spectrum, ring planarity, r_5-structure and dipole moment *J. chem. Soc. Faraday Trans. II,* 69 (1973), 902–15.

Pt II. Out-of-plane ring modes from far infra-red, Raman and microwave spectra: ring bending potential function. *Ibid.,* 69 (1973), 916–25.

BLOODWORTH, A. J., Organometallic oxides, alkoxides, and peroxides. Pt IV. Reaction of phenylmercury(II) alkoxides, oxide and hydroxide with organic isocyanates. *J. chem. Soc. Perkin I* (1973), 261–7.

BLOODWORTH, A. J., BYLINA, G. S. Oxymetallation. Pt III. Competitive epoxidation during the hydridodemercuration of β-mercurated dialkyl peroxides with sodium borohydride. *J. chem. Soc. Perkin I* (1972), 2433–8.

BLOODWORTH, A. J., BUNCE, R. J., Oxymetallation. Pt IV. The reaction of derivatives from the t-butyl-peroxymercuration of $\alpha\beta$-unsaturated esters and ketones with sodium borohydride. *J. Chem. Soc. Perkin I* (1972), 2787–92.

BOSWORTH, YVONNE, CLARK, R. J. H., RIPPON, D. M., The vapour phase Raman spectra, Raman band control analyses, and coriolis constants of spherical top molecules MF_6 (M=S, Se, Te, Mo, W or U), $M(CH_3)_4$ (M=C, Si, Ge, Sn, or Pb), P_4, As_4 and OsO_4. *J. Mol. Spectroscopy,* 46 (1973), 240–55.

BRADDOCK, P. D., KHOKHAR, A. R., TOBE, M. L. (with Connors, T. A., Jones, M., Ross, W. C. J.), New platinum complexes with antitumour activity. *Chem. Biol. Interactions,* 5 (1972), 314–24.

CALLOMON, J. H., PARKIN, J. E., LOPEZ-DELGADO, R., Non-

radiative relaxation of the excited $^1\tilde{B}_2u$ state of benzene. *Chem. Phys. Letters,* 13 (1972), 125–31.

CALLOMON, J. H., VERNON, C. A. (with Banks, Barbara, E. C), McClare's quantum mechanical muscle model. *Nature, Lond.* 242 (1973), 473–4.

CARPENTER, B. K., CLEMENS, K. E., SCHMIDT, E. A., HOFFMANN, H. M. R., Synthesis of 3(2H)-furanones. *J. Amer. chem. Soc.,* 94 (1972), 6213–14.

CHADWICK, D., LEGON, A. C., MILLEN, D. J., Microwave spectra and structure of 1-cyano-and 1-iodoadamantane. *J. chem. Soc Faraday Trans. II,* 68 (1972), 2064–9.

CLARK, R. J. H., From manaccan to $MeTiCl_3$. *J. chem. Phys. Soc. (U.C.L.),* 4 (1973), 6–13.

The impact of Laser-Raman spectroscopy on inorganic chemistry. *The Spex Speaker,* 18 (1973), 1–10.

CLARK, R. J. H., COLES, M. A., Mono- and bi-nuclear anionic derivatives of methyltitanium trichloride and methyltitanium tribromide and related complexes. *J. chem. Soc. Dalton* (1972), 2454–63.

CLARK, R. J. H., MITCHELL, P. D., The Raman spectra of the vanadium oxytrihalides in the vapour, dissolved, and solid states, and of the mixed oxytrihalides. *J. chem. Soc. Dalton* (1972), 2429–33.

CLARK, R. J. H., RIPPON, D. M., The vapor-phase spectra, Raman band contour analyses, Coriolis constants and force constants of spherical-top molecules MX_4 (M=Group IV element, X=F, C1, Br, or I). *J. mol. Spectroscopy,* 44 (1972), 479–503.

Vapour phase Raman spectra of spherical top molecules. *Adv. Raman Spectroscopy,* 1 (1973), 493–6.

DASGUPTA, T. P., FITZGERALD, W., TOBE, M. L., Mechanism and steric course of octahedral aquation. Pt XVI. The acid-, base-, and mercury(II)-catalyzed hydrolysis of *trans*-chloroacetato- and *trans*-chlorobenzoatobis(ethylenediamine)cobalt(III) perchlorates. *Inorg. Chem.,* 11 (1972), 2046–50.

DASGUPTA, T. P., TOBE, M. L., The role of the carboxylate group in octahedral substitution. *Coordination Chem. Revs.,* 8 (1972), 104–9.

DAVIES, A. G., Mononuclear hydrocarbons carrying nuclear substituents containing selenium or tellurium. *Rodd's Chemistry of Carbon Compounds,* vol. III, Pt A, ed. S. Coffey. Amsterdam: Elsevier, 1971, 491–501.

A radical approach to organometallic chemistry. *Chem. & Ind.,* No. 21 (1972), 832–5.

DAVIES, A. G., DENNIS, R. W., GRILLER, D., INGOLD, K. U., ROBERTS, B. P., An e.s.r. study of the structure of phosphorus radicals in solution. *Molec. Phys.,* 25 (1973), 989–91.

DAVIES, A. G., DENNIS, R. W., GRILLER, D., ROBERTS, B. P., A kinetic study of α- and β-scission of phosphoranyl radicals, $R_n\dot{P}(OR)_{4-n}$. *J. Organometallic Chem.,* 40 (1972), C33–5.

DAVIES, A. G., GRILLER, D., ROBERTS, B. P., Homolytic organometallic reactions. Pt IX. An electron spin resonance study of the mechanism of β-scission of tetra-alkoxyphosphoranyl radicals. Formation of trialkoxy(methyl)phosphoranyl radicals. *J. chem. Soc., Perkin II* (1972), 2224–33.

DAVIES, A. G., ROBERTS, B. P., Bimolecular homolytic substitution at metal centres. *Free Radicals*, vol. I, ed. J. K. Kochi. New York: Wiley-Interscience, 1973, 547–89.
Bimolecular homolytic substitution at a metal center. *Acc. Chem. Res.*, 5 (1972), 387–92.

DAVIES, A. G., ROBERTS, B. P., SANDERSON, B. R., An electron spin resonance study of some sulphonyl radicals in solution. *J. chem. Soc., Perkin II* (1973), 626–30.

DAVIES, A. G., ROBERTS, B. P., SCAIANO, J. C., The reaction of tert-butoxyl radicals with stannic chloride. *J. Organometallic Chem.*, 42 (1972), C27–8.

DAVIES, A. G., ROBERTS, B. P., SMITH, J. M., Homolytic organometallic reactions. Pt VIII. Kinetics of the homolytic reactions between *N*-halogenosuccinimides and tetra-alkyltins. *J. chem. Soc., Perkin II* (1972), 2221–4.

DAVIES, A. G., SCAIANO, J. C., Homolytic organometallic reactions. Pt X. Kinetics of the homolytic photoreductions of aromatic ketones by trialkylboranes. *J. chem. Soc., Perkin II* (1972), 2234–8.

DEEMING, A. J., UNDERHILL, M., Dehydrogenation of organic and inorganic molecules by reaction with $O5_3$ $(CO)_{12}$. *J. Organometallic Chem.*, 42 (1972), C60–2.
Hydrogenation and fluxional behaviour of $H_2Os_3(CCH_2)(CO)_9$, a vinylidene complex derived from ethylene. *Chem. Comms.*, No. 8 (1973), 277–8.

DENNIS, R. W., ROBERTS, B. P., An ESR study of the reactions of t-butoxyl radicals with aminophosphines. *J. Organometallic Chem.*, 43 (1972), C2–4.
Pseudorotation of trialkoxydimethyl-aminophosphoranyl radicals in solution. *Ibid.*, 37 (1973), C8–10.

DODD, D., JOHNSON, M. D., The organic compounds of cobalt(III). *J. Organometallic Chem.*, 52 (1973), 1–232. (Special issue.)

DOONAN, HILARY J., RIVA, FRANCESCA, VERNON, C. A., WALKER, J. M. (with Bossa F., Barra, D., Carloni, M., Fasella, P.), The primary structure of aspartate aminotransferase from pig heart muscle. Partial sequences determined by digestion with pepsin and trypsin. *Biochem. J.*, 130 (1972), 443–52.

DOONAN, S., DOONAN, HILARY, J., HANFORD, R., RIVA, FRANCESCA, WALKER, J. M. (with Bossa, F., Barra, D., Carloni, M.), The primary structure of cytoplasmic aspartate aminotransferase from pig heart muscle. *Abstr. Commun. Meet. Fed. Eur. Biochem. Soc.*, 8 (1972), No. 362.

EVERETT, J. W., GARRATT, P. J., Bicyclobutylidene. *Chem. Comms.*, No. 11 (1972), 642.

FENTON, D. E., MERCER, MARY, TRUTER, MARY R., The crystal structure of a 'model carrier' complex formed between sodium bromide and 2,3,11,12-dicyclohexyl-1,4,7,10,13,16-hexaoxocyclo-octadeca-2,11-diene ('dicyclohexyl-18-crown-6'). *Biochem. biophys. Res. Comms.*, 48 (1972), 10–15.

FENTON, D. E., NAVE C., TRUTER, MARY R., Complexes of lithium salts with 1,4,8,11-tetra-azacyclotetradecane. *Chem. Comms.*, No. 23 (1972), 1303–4.

GARRATT, P. J., NICOLAOU, K. C., SONDHEIMER, F., Monocyclic allenes. The synthesis of 3,8,9-cycloundecatriene-1,6-diones and 12-oxabicyclo[7.2.1]dodeca-5,6,9,11-tetraen-3-one, a furanophane containing an allene group. *J. Org. Chem.*, 38 (1973), 864–8.

GARRATT, P. J., VOLLHARDT, K. P. C., Wittig reactions of 1,2-benzocyclobutadienequinone synthesis of 2-thianorbiphenylene (benzo [3,4]cyclobuta[1,2-*c*]thiophene). *J. Amer. chem. Soc.*, 94 (1972), 7087–92. (with Jones, A. J.), ^{13}Shifts in biphenylene and analogous compounds. *Angew. Chem. internat. Ed. Eng.*, 12 (1973), 241–3.

GLOVER, VIVETTE (with Green, D. P. L.), A simple quick microassay for choline acetyltransferase. *J. Neurochem.*, 19 (1972), 2465–6.

GRILLER, D., ROBERTS, B. P., Spirophosphoranyl radicals: tetra-alkoxyphosphoranyl radicals of remarkable stability towards β-scission. *J. Organometallic Chem.*, 42 (1972), C47–50.

HARRIS, J. W., VANCE, E. R., Induced graphitisation around crystalline inclusions in diamond. *Mineral. and Petrol.*, 35 (1972), 227–34.

HILL, A E., GREENWOOD, G., HOFFMANN, H. M. R., Cycloadditions and reactivity of 2-methoxyallyl halides. *J. Amer. chem. Soc.*, 95 (1973), 1338–40.

HOFFMANN, H. M. R., CLEMENS, K. E., SMITHERS, R. H., Stereospecific generation of 2-oxyallylic cations from two new sources. Steric course of cycloaddition to conjugated dienes. *J. Amer. chem. Soc.*, 94 (1972), 2940–6.

HOFFMANN, H. M. R., NOUR, T. A., SMITHERS, R. H., Debromination of α,α'-dibromo-ketones with a zinc-copper couple in methanol. Formation of α-methoxy-ketones as a criterion for the intervention of 2-oxyallyl cations. *Chem. Comms.*, No. 16 (1972), 963–4.

HOWES, P. D., MONAHAN, AUDREY, SONDHEIMER, F. (with Grohmann, K., Mitchell, R. H.), A simple synthesis of the cis,cis and trans,trans isomers of tetrabenzo[*a,c,g,i*]cyclododecene (*sym*-tetrabenz[12]-annulene). *J. Org. Chem.*, 38 (1973), 808–9.

HOWES, P. D., SONDHEIMER, F., Synthesis of the 5,6 : 14,15-bis tetramethylene)-1,3-bisdehydro[15]annulenium cation, an aromatic 15-membered carbocyclic system. *J. Amer. chem. Soc.*, 94 (1972), 8261.

HOWES, P. D., LEGOFF, E., SONDHEIMER, F., A simple new synthesis of macrocyclic dehydroannulenones. 4,5 : 10,11-bis(tetramethylene)-6,8-bisdehydro[17]annulenone. *Tetrahedron Letters* (1972), 3691–2.

A simple new synthesis of macrocyclic dehydroannulenones. Stereoisomeric 4,5 : 10,11-bis(tetramethylene)-6,8-annulenones. *Ibid.* (1972), 3695–8.

HUGHES, D. L., TRUTER, MARY R., Crystal structure of salicylato-(1,10-phenanthroline)thallium(I). *J. chem. Soc., Dalton* (1972), 2214–19.

KNAPP, A. G., STIDDARD, M. H. B., Adsorption of xenon and hydrogen atoms and their interaction on silver films. *J. chem. Soc., Faraday Trans. I* (1972), 2139–49.

LEGOFF, E., SONDHEIMER, F., The synthesis of the 1-methoxy-4,5 : 10,11-bis(tetramethylene)-6,8-didehydro[13]annulenyl anion, an aromatic 13-membered carbocyclic system. *Angew. Chem. internat. Ed. Eng.*, 11 (1972), 926–7.

LEGON, A. C., Microwave spectrum of tellurium pentafluoride chloride. *J. chem. Soc., Faraday Trans. II,* 69 (1973), 30–5.

LEGON, A. C., MILLEN, D. J., Microwave spectroscopy. *Molecular Spectroscopy*. Specialist Report. London: Chemical Society, 1973, 1–61.

LONSDALE, KATHLEEN (the late), SUTOR, D. JUNE, Crystallographic studies of urinary and biliary calculi. *Soviet Physics—Crystallography,* 16 (1972), 1060–8.

LOUDON, A. G., MACCOLL, A., SMITH, D., Heavy atom kinetic isotope effects. Pt I. Liquid phase decarboxylation of malonic acid. *J. chem. Soc., Faraday Trans I,* 69 (1973), 894–8.

Pt II. Nitrogen isotope effects in the decomposition of aqueous aromatic diazonium salts. *Ibid.,* 899–903.

MCGIRK, R. H., SONDHEIMER, F., The synthesis of stereoisomeric bisdehydrothia[17]annulene and their dioxides. *Angew. Chem., internat. Ed. Eng.,* 11 (1972), 834–5.

MACCOLL, A. (with Chuchani, G., Martin, F., Barroeta, N.), Pyrolyses of some highly branched secondary acetates. *J. chem. Soc., Perkin II* (1972), 2239–41.

(with Chuchani, G., Martin, I.), The gas-phase pyrolysis of 1,2-dimethylpropyl acetate. *Ibid.* (1973), 663–4.

MACCOLL, A., NAGRA, S. S., Homogenous gas phase pyrolysis of *N*-t-butylacetamide. *J. chem. Soc., Faraday I,* 69 (1973), 1108–16.

MALLINSON, P. R., TRUTER, MARY R., Crystal structures of complexes between alkali-metal salts and cyclic polyethers. Pt v. The 1:2 complex formed between potassium iodide and 2,3,5,6,8,9,11,12-octahydro-1,4,7,10,13-benzopentaoxacyclopentadecin (benzo-15-crown-5). *J. chem. Soc., Perkin II* (1972), 1818–23.

NYHOLM, R. S. (the late), Methoden für die Untersuchung der Struktur der Materie. *Chemieunterricht Heute.* Frankfurt-am-Main: Verlag Moritz Diesterweg, 1972, 136–63.

NYHOLM, R. S. (the late), BRADFORD, C. W., Oxidative addition reactions of triphenylphosphine with dodecarbonyltriosmium. *J. chem. Soc., Dalton* (1973), 529–33.

PAULING, P. J., DNA—the race that never was? *New Scientist,* 58 (1973), 558–60.

PAULING, P. J., PETCHER, T. J., Neuromuscular blocking agents: structure and activity. *Chem.-Biol. Interactions,* 6 (1973), 351–65.

PEARCE, F., Problems in the assay of nerve growth factor. *Nerve Growth Factor and its Antiserum,* ed. E. Zaimis. London: Athlone Press, 1972, 253–61.

Absence of nerve growth factor in the venoms of bees, scorpions, spiders and toads. *Toxicon,* 11 (1973), 309–10.

PEARCE, F., BANTHORPE, D. V., BERRY, A. R., DAVIES, H.ff.S., VERNON, C. A. (with Banks, Barbara E. C.), The isolation and characterization of nerve-growth factor from the venom of *vipera russelli. Eur. J. Biochem.,* 29 (1972), 417–25.

PEARCE, F., BANTHORPE, D. V., COOK, JANET M., VERNON, C. A., Adsorption of nerve growth factor onto surfaces. *Eur. J. Biochem.,* 32 (1973), 569–75.

PETCHER, T. J., PAULING, P. J., Cholinesterase inhibitors: structure of eserine. *Nature, Lond.,* 241 (1973), 277.

POONIA, N. S., TRUTER, MARY R., Comparison of complex formation by thallium(I) and potassium salts of potentially chelating anions. *J. chem. Soc., Dalton* (1972), 1791–5.

RICCI, A., RIDD, J. H., Inductive and field effects in aromatic substitution. Pt IV. The nitration of 1- and 2-phenylcyclohexylammonium ions. *J. chem. Soc., Perkin II* (1972), 1544–7.

(with Danielli, R.), Pt V. Kinetics of nitration of the quaternary salts of diazacyclophanes and of related unbridged ions. *Ibid.* (1972), 1547–53.

Pt VI. The kinetics of hydrogen isotope exchange in quaternary salts of diazacyclophanes and in the related unbridged ions. *Ibid.* (1972), 2107–10.

RIDD, J. H., Heteroaromatic reactivity. *Physical Methods in Heterocyclic Chemistry*, ed. A. R. Katritzky. New York: Academic Press, 1971, 55–120.

RIDD, J. H., SCRIVEN, E. F. V., The mechanism of nitration of 2,3-dinitroaniline in aqueous sulphuric acid. Evidence for Bamberger's hypothesis of *N*-nitration followed by rearrangement. *Chem. Comms.*, No. 11 (1972), 641.

ROBERTS, B. P. (with Perkins, M. J.), The rate of addition of t-butoxycarbonyl radicals to 2-methyl-2-nitrosopropane ("t-nitrosobutane"). *Chem. Comms.*, No. 5 (1973), 173–4.

SCAIANO, J. C. (with Previtali, C. M.), The kinetics of photochemical reactions. Pt I. Application of a modified bond-energy-bond-order method to the atom abstraction reactions of excited carbonyl compounds. *J. chem. Soc., Perkin II* (1972), 1667–72.

Pt II. Calculation of kinetic parameters for the intermolecular hydrogen abstraction reactions of the triplet state of carbonyl compounds. *Ibid.*, 1672–6.

SCHMIDT, E. A., HOFFMANN, H. M. R., Thermodynamically unstable enols. 2-Methyl-2-penten-3-ols from 4-isopropylidene-5,5-dimethyl-2-dimethylamino-1,3-dioxolane. *J. Amer. chem. Soc.*, 94 (1972), 7832–7.

SMITH, P. J., DODD, D., Structural organotin chemistry. Pt I. Some diorganotin(IV) Schiff base complexes. *J. Organometallic Chem.*, 32 (1972), 195–9.

SONDHEIMER, F., WIFE, R. L., Concerning the synthesis of bufalin. *Tetrahedron Letters* (1973), 765–6.

STÖCKEL, K., GARRATT, P. J., SONDHEIMER, F. (with de Julien de Zelicourt, Y., Oth, J. F. M.), The thermolysis of [18]annulene. *J. Amer. chem. Soc.*, 94 (1972), 8644–5.

SUTOR, D. JUNE, The nature of urinary stones. *In-Urolithiasis: Physical Aspects*, ed. B. Finlayson, L. L. Hench, L. H. Smith. Washington: National Academy of Sciences, 1972, 43–64.

(with Joekes, A. M., Rose, G. A.), Multiple renal silica calculi. *Brit. Med. J.*, 1 (1973), 146–7.

(with Shaw, D. G.), Cystine stone dissolution. *Brit. J. Radiology*, 45 (1972), 664–6.

SUTOR, D. JUNE, WOOLEY, SUSAN E., Composition of urinary calculi by X-ray diffraction. Collected data from various localities. Pts XII-XIV. Northern Ireland, South Africa and Kuwait. *Brit. J. Urology*, 44 (1972), 287–91.

The structure and formation of urinary calculi. Pt I. Oriented crystal growth. *Ibid.*, 44 (1972), 532–6.

The nature and incidence of gallstones containing calcium. *J. Brit. Soc. Gastroenterology,* 14 (1973), 215–20.
(with Cowie, A. G. A., Clark, C. G.), The calcium palmitate gall-stone. *Brit. J. Surg.,* 60 (1973), 16–18.

THIRUNAMACHANDRAN, T. (with Babiker, M., Power, E. A.), Atomic field equations for Maxwell fields interacting with non-relative quantal sources. *Proc. roy. Soc.,* A 332 (1973), 187–97.
(with Mitchell, K. A. R.), A comparison of the resonance, perfect pairing, and molecular orbital wave functions for BeH_2. *Mol. Phys.,* 23 (1972), 947–55.

TOBE, M. L., *Inorganic Reaction Mechanisms.* London: Nelson, 1972. 192 pp.
Reaction mechanisms in inorganic chemistry. *M.T.P. International Review of Science.* Inorganic Chemistry, ser. 1, vol. 9, ed. M. L. Tobe. London: Butterworth, 1972, 393.
Slow and fast reactions: some comments on the measurement of reaction rates. *Estratto dagli atti della Academia Peloritana dei Pericolanti,* 51 (1971), 135–9.

VAN BRONSWYK, W., CLARK, R. J. H., The vibrational spectrum of the molecule $Os_4 O_4 (CO)_{12}$. *Spectrochim. Acta* 28A (1972), 1429–33.

VANCE, E. R. (with Anderson, B. W.), Study of metamict Ceylon zircons. *Min. Mag.,* 38 (1972), 605–13.

VERNON, C. A., Biological chemistry in the University. *Proc. roy. Soc. Med.,* 66 (1973), 2–3.
(with Banks, Barbara E. C., Damjanovic, V.), The so-called thermodynamic compensation law and thermal death. *Nature, Lond.,* 240 (1972), 147–8.
(with Simeon, Vera, Reiner, Elsa), Effect of temperature and pH on carbamoylation and phosphorylation of serium cholinesterases. *Biochem. J.,* 130 (1972), 515–24.

VINTER, J. D., HOFFMANN, H. M. R., Direct observations of chair-boat equilibria in bridged six-membered rings. *J. Amer. chem. Soc.,* 95 (1973), 3051–2.

YAMAMOTO, K., SONDHEIMER, F., Synthesis of 9,10:15,16-bis (tetramethylene)cyclooctadeca-7,9,15,17-tetraene-2,4,11,13-tetrayne-1,6-dione, a tetraalkylated tetrahydro[18]annulenedione. *Angew. Chem. internat. Ed. Eng.,* 12 (1973), 68–9.

GEOLOGY

BARNARD, T., Aberrant genera of foraminifera from the Mesozoic (Subfamily Ramulininae Brady 1884). *Revista Espanola de Micropaleontologia,* iv (1972), 387–402.

BARNARD, T., ROOD, A. P., On Jurassic coccoliths: Stephanolithion, Diadozygus and related genera. *Eclogae Geologicae Helvetiae,* 65 (1972), 327–42.

DONOVAN, D. T., The geology and origin of the Silver Pit and other closed basins in the North Sea. *Proc. Yorks. Geol. Soc.,* 39 (1973), 267–93.
The Mesozoic rocks of east Greenland and north-west Europe (abstract). *J. geol. Soc. Lond.,* 129 (1973), 321–2.

The influence of theoretical ideas on ammonite classification from Hyatt to Trueman. *University of Kansas Paleontological Contributions,* Paper 62 (1973), 16 pp.

(with Tratman, E. K., Musgrave, J. H.), Gough's Cave, Cheddar, Somerset. *Proc. Univ. Bristol Spelaeol. Soc.,* 13 (1972), 49–60.

(with Callomon, J. H., Trümpy, R.), An annotated map of the Permian and Mesozoic formations of East Greenland. *Meddelelser om Grønland,* 168 (1972), 1–35.

GETTY, T. A., A revision of the generic classification of the family Echioceratidae (Cephalopoda, Ammonoidea) (Lower Jurassic). *University of Kansas Paleontological Contributions, Paper* 63 (1973), 32 pp.

HALL, R., MASON, R., A tectonic mélange from the Eastern Taurus Mountains, Turkey. *J. geol. Soc. Lond.,* 128 (1972), 395–7.

JONES, E. J. W. (with Heezen, B. C., MacGregor, I. D., Hekel, H., Krasheninnikov, V., Okada, H.), Diachronous deposits: A kinematic interpretation of the post-Jurassic sedimentary sequence on the Pacific Plate. *Nature, Lond.,* 241 (1973), 25–32.

JONES, G. P., Management of underground water resources. *Quart. J. Engng. Geol.,* 4 (1972), 317–28.

Contribution to discussion. *Proc. Symp. Advanced Techniques in River Basin Management.* London: Institute of Water Engineers, 1972, 124–5.

MACKAY, J. W., Sources of Information for the Literature of Geology. *Geological Society of London*: 1973. 61 pp.

MORTIMER, MARGARET G., The palynology of some early Carboniferous rocks in the East Midlands, England. *III Int. Palynological Conf. Section* 4, *Novosibirsk* 1971. Novosibirsk: U.S.S.R. Academy of Sciences, 1972, 20.

(with Chaloner, W. G.), The palynology of the concealed Devonian rocks of southern England. *Ibid.,* 21.

(with Chaloner, W. G.), The palynology of the concealed Devonian rocks of southern England. *Bull. geol. Surv. Gt. Brit.,* 39 (1972), 1–56.

MURRELL, S. A. F., EDMOND, O. (the late), Experimental observations on rock fracture at pressures up to 7 kb and the implications for earthquake faulting. *Tectonophysics,* 16 (1973), 71–87.

SMITH, A. J., Anglo-French cooperation for the production of English Channel maps. *N.E.R.C. Newsjournal,* 6 (1972), 15–16.

Cooperative investigation of the Caribbean and adjacent regions: United Kingdom programme. *N.E.R.C. Publication,* Ser. C, No. 10 (1973), 8 pp.

WELLS, M. K. (with Wells, A. K.), *Petrology of the Igneous Rocks* (revised 13th ed.). London: George Allen and Unwin, 1973. 551 pp.

WIGLEY, P., The distribution of strontium in limestones on Barbuda, West Indies. *Sedimentology,* 20 (1973), 295–304.

HISTORY AND PHILOSOPHY OF SCIENCE

MAXWELL, A. N., A new look at the quantum mechanical problem of measurement. *Amer. J. Phys.,* 40 (1972), 1431–5.

Alpha particle emission and the orthodox interpretation of quantum mechanics. *Physics Letters,* 43A (1973), 29–30.

RATTANSI, P. M., Some evaluations of reason in sixteenth and seventeenth-century natural philosophy. *Changing Perspectives in the History of Science, Essays in Honour of Joseph Needham,* ed. M. Teich and R. Young. London: Heinemann Educational Books, 1973, 148–66.
Newton's alchemical studies. *Science, Medicine and Society in the Renaissance, Essays to honour Walter Pagel,* vol. II, ed. Allen G. Debus. New York and London: Science History Publications and Heinemann, 1972, 167–82.

SMEATON, W. A., E. F. Geoffroy was not a Newtonian chemist. *Ambix,* 18 (1971), 212–14.

HUMAN GENETICS AND BIOMETRY

ATASU, M. (with Taysi, K., Browbow, M., Balci, S., Madan, K., Say, B.), D_1 trisomy syndrome. *Brit. J. Pediat.,* 82 (1973), 263–8.
(with Tuncbilek, E., Balci, S., Say, B.), Dermatoglyphic findings in Laurence-Moon-Biedl syndrome. *Lancet,* ii (1973), 98–9.
(with Tuncbilek, E., Say, B.), Dermatoglyphics in trisomy 8. *Lancet,* ii (1972), 821.

AZEVEDO, E., Historical note on inheritance of sickle cell anemia. *Amer. J. hum. Genet.,* 25 (1973), 457–8.

HARRIS, H., Genetics of human enzymes and proteins. *Proc. 4th Int. Congr. Human Genetics, Paris, 1971. Excerp. Med. Amsterdam* (1972), 273–6.
Potentialities of lymphocytoid lines in human biochemical genetics. *Birth Defects,* vol. IX, *Long Term Lymphocyte Cultures in Human Genetics,* ed. D. Bergsma. New York: National Foundation, 1973, 132–7.

HOLT, S. B., The effect of absence of thumb on palmar dermatoglyphics. *J. Med. Genet.,* 9 (1972), 448–50.
Dermatoglyphics. *Nursing Mirror* (July, 1973), 16–19.
Dermatoglyfos en el mongoismo. *Bol. Fund. Jimenez. Diaz.,* 5 (1973), 5–10.

HOPKINSON, D. A. (with Edwards, Y. H., Edwards, P. A.), A trimeric structure for mammalian purine nucleoside phosphorylase. *F.E.B.S. Letters,* 32 (1973), 235–7.

HOPKINSON, D. A., HARRIS, H. (with Peters, J.), Genetic and non-genetic variation of triose phosphate isomerase (TPI) isozymes in human tissues. *Ann. hum. Genet., Lond.,* 36 (1973), 297–312.
(with Smith, M.), Studies on the subunit structure and molecular size of the human alcohol dehydrogenase isozymes determined by the different loci, ADH_1, ADH_2 and ADH_3. *Ann. hum. Genet., Lond.,* 36 (1973), 401–14.

JAMES, W. H., Birthweight and sibship size. *J. Biosoc. Sci.,* 4 (1972), 227–34.
Note on the Takahashi effect. *Ibid.,* 347–50.
Cycle day of human ovulation. *Ibid.,* 371–8.
Secular changes in dizygotic twinning rates. *Ibid.,* 427–34.
Anencephaly and the season of birth. *Community Medicine,* 127 (1972), 130.

KALMUS, H., Minimum central faculties for chemical perception.

Olfaction and Taste, vol. IV, ed. D. Schneider. Stuttgart: Wissch. Verlags MBH, 1972, 161–6.
Kinds of cone mediated perception: poikilopic and ochropic vision. *Die Farbe (Berlin)*, 20 (1972), 187–91.

LUCAS, M. (with Colover, J., Comley, J. A., Roe, A. M.), Neurological abnormalities in the 'cri-du-chat' syndrome. *J. Neurol. Neuros. Psychiat.*, XXXV (1972), 711–19.

LUCAS, M., MULLARKEY, M. (with Abdulla, U.), Study of chromosomes in the newborn after ultrasonic fetal heart monitoring in labour. *Brit. med. J.*, 3 (1972), 795–6.

LUCAS, M., WALLACE, I., Chromosomes of Gorilla gorilla gorilla. *J. Zool. Lond.*, 169 (1973), 403–7.
(with Hirschhorn, K.), Precise identification of various chromosomal abnormalities. *Ann. hum. Genet., London.*, 36 (1973), 375–9.

LUCAS, M., WALLACE, I., HIRSCHHORN, K., Recurrent abortions and chromosome abnormalities. *J. Obst. Gyn. Brit. Comm.*, 79 (1972), 1119–27.

MITTWOCH, U. L., *Genetics of Sex Differentiation*. New York and London: Academic Press, 1973. 253 pp.
(with Buehr, M. L.), Gonadal growth in embryos of sex reversed mice. *Differentiation*, 1 (1973), 219–24.

POVEY, S., GARDINER, S. E., WATSON, B., HARRIS, H. (with Mowbray, S., Arthur, E., Steel, C. M., Blenkinsop, C., Evans, H. J.), Genetic studies on human lymphoblastoid lines; isozyme analysis on cell lines from forty-one different individuals and on mutants produced following exposure to a chemical mutagen. *Ann. hum. Genet., Lond.*, 36 (1973), 247–66.

PRICE, G., SMITH, C. A. B., Fisher's fundamental theorem made clear. *Ann. hum. Genet., Lond.*, 36 (1972), 129–40.

ROBSON, E. B., COOK, P. J. L. (with Faed, M. J. W., Marmion, V. J., Robertson, J.), Inherited pericentric inversion of chromosome 5: a family with history of neonatal death and a case of 'cri-du-chat' syndrome. *Cytogenetics*, 11 (1972), 400–11.

ROBSON, E. B., COOK, P. J. L., CORNEY, G., HOPKINSON, D. A., NOADES, J. (with Cleghorn, T. E.), Linkage data on *Rh*, *PGM*$_1$, *PGD*, *Peptidase C* and *Fy* from family studies. *Ann. hum. Genet., Lond.*, 36 (1973), 393–9.

ROSTRON, J., A multivariate statistical study of skull measurements of five taxa of gazelles. *Biol. J. Linn. Soc.*, 4 (1972), 1–14.
(with Hemmings, S. K.), A multivariate analysis of measurements on the Scottish Middle Old Red Sandstone antiarch fish genus, *Pterichthyodes Bleeker*. *Biol. J. Linn. Soc.*, 4 (1972), 15–28.

SMITH, C. A. B., Electric currents in regular matroids. *Combinatories*, ed. D. J. A. Welsh and D. R. Woodall. Essex: Institute of Mathematics, 1972, 262–84.
Programming the human computer, I. *Mathematics in School*, 1 (1972), 8–9.
Programming the human computer, II. *Ibid.*, 2 (1973), 20–1.

STEWART, A., Prognosis for infants of very low birth weight. *Perinatal Medicine*, ed. H. Bossart, J. N. Cruz, A. Huber, L. S. Prod'hom, and S. Sistek. Berne: Hans Huber, 1973, 181–9.

WATSON, B., GARDINER, S. E., HARRIS, H. (with Gormley, I. P., Evans, H. J.), Reappearance of murine hypoxanthine guanine phosphoribosyl transferase activity in mouse A9 cells after attempted hybridisation with human cell lines. *Exp. Cell Res.*, 75 (1972), 401–9.

MATHEMATICS

BENNETS, D. A., HOCKING, L. M., On non-linear Ekman and Stewartson layers in a rotating fluid. *Proc. roy. Soc.*, A, 333 (1973), 469–89.

BROWN, S. N., RILEY, N., Flows past a suddenly heated vertical plate. *J. Fluid Mech.*, 59 (1973), 225–37.

BROWN, S. N., STEWARTSON, K., On the propagation of disturbances in a laminar boundary layer I and II. *Proc. Camb. phil. Soc.*, 73 (1973), 493–503, 505–14.

BUTLER, G. J., Simultaneous packing and covering in euclidean space. *Proc. Lond. Math. Soc.*, 25 (1972), 721–35.

HAWKES, J., The measure of the range of a subordinator. *Bull. Lond. Math. Soc.*, 5 (1973), 21–8.

HOCKING, L. M., A numerical study of a mildly non-linear partial differential equation. *Lecture notes in Physics*, 19. *Proc. 3rd Int. Conf. Numerical Methods in Fluid Mechanics.* Berlin: Springer-Verlag, 1972, 112–19.

JAYNE, J. E., Topological representations of measurable spaces. *General Topology and its Relations to Modern Analysis and Algebra*, 3. New York: Academic Press, 1972, 217–21.

JOHNSON, F. E. A., Lefschetz duality and topological tubular neighbourhoods. *Trans. Amer. Math. Soc.*, 172 (1972), 95–110.

(with Wall, C. T. C.), On groups satisfying Poincare duality. *Annals of Math.*, 96 (1972), 592–8.

KELLY, J. D., A method for constructing measures appropriate for the study of cartesian products. *Proc. Lond. Math. Soc.*, 26 (1973), 521–46.

LARMAN, D. G., Projecting and uniformising Borel sets with K_σ sections. I. *Mathematika*, 19 (1972), 231–44.

On sets projectively equivalent to the vertices of a convex polytope. *Bull. Lond. Math. Soc.*, 4 (1972), 6–12.

LARMAN, D. G., MCMULLEN, P., Arcs with increasing chords. *Proc. Camb. phil. Soc.*, 72 (1972), 205–7.

LARMAN, D. G., ROGERS, C. A., The normability of metrizable sets. *Bull. Lond. Math. Soc.*, 5 (1973), 39–48.

MICHAEL, D. H. (with Taylor, Sir G. I.), On making holes in a sheet of fluid. *J. Fluid Mech.*, 58 (1973), 625–40.

NORBURY, J., A steady vortex ring close to Hill's spherical vortex. *Proc. Camb. phil. Soc.*, 72 (1972), 253–84.

A family of steady vortex rings. *J. Fluid Mech.*, 57 (1973), 417–31.

O'NEILL, M. E. (with Majumdar, S. R.), On the Stokes resistance of two equal spheres in contact in a linear shear field. *Chem. Eng. Science*, 27 (1972), 2017–28.

OSTASZEWSKI, A. J., Saturated structures and a theorem of Arhangelskiĭ. *J. Lond. Math. Soc.*, 6 (1973), 453–8.

POWER, E. A., Casimir's asymptotic potential on a perturbation on the

electromagnetic vacuum. *Magic without Magic, John Archbold Wheeler.* San Francisco: Freeman, 1972, 135–9.

(with Babiker, M., Thirunamachandran, T.), Atomic field equations for Maxwell fields interacting with non-relativistic quantal sources. *Proc. roy. Soc.*, A, 332 (1973), 187–97.

ROGERS, C. A., Lusin's second separation theorem. *J. Lond. Math. Soc.*, 6 (1973), 491–503.

Length, area and volume. *Mathl. Gaz.*, 57 (1973), 100–10.

A classification of path-finite trees. *Bull. Lond. Math. Soc.*, 5 (1973), 1–10.

SEYMOUR, R. M., The real *K*-theory of Lie groups and homogeneous spaces. *Quart. J. Math., Oxford*, 24 (1973), 7–30.

SMITH, F. T., STEWARTSON, K., On slot injection into a supersonic laminar boundary layer. *Proc. roy. Soc.*, A, 332 (1973), 1–22.

Plate injection into a separated supersonic boundary layer. *J. Fluid Mech.*, 58 (1973), 143–59.

STEWARTSON, K., On trapped oscillations of a rotating fluid in a thin spherical shell, II. *Tellus*, 24 (1972), 283–7.

On trapped oscillations in a slightly viscous rotating fluid. *J. Fluid Mech.*, 54 (1972), 749–61.

On the impulsive motion of a flat plate, II. *Quart. J. Mech. & Appl. Math.*, 26 (1973), 143–52.

(with Belcher, R. J., Burggraf, O. R., Cooke, J. C., Robins, A. J.), Limitless boundary layers. *Recent Research on Unsteady Boundary Layers, IUTAM Symp., Quebec 1971.* Quebec: Laval University Press, 1972, 1444–65.

(with Messiter, A. F.), Evolution of the laminar wake behind a flat plate and its upstream influence. *A.I.A.A. J.*, 10 (1972), 719.

STEWARTSON, K., WALKER, J. D. A., The flow past a circular cylinder in a rotating frame. *Zeit. f. angew. Math. Phyz.*, 23 (1972), 745–52.

THOMAS, C. B. (with Lee, R.), Free finite group actions on S^3. *Bull. Amer. Math. Soc.*, 79 (1973), 211–15.

(with Dennis, S. C. R.), The boundary layer in a shock tube. *J. Fluid Mech.*, 56 (1972), 19–47.

WATSON, G. L., On the sums of a square and five cubes. *J. Lond. Math. Soc.*, 5 (1972), 215–18.

One-class genera of positive ternary quadratic forms. *Mathematika*, 19 (1972), 96–104.

PHYSICS AND ASTRONOMY

AITKEN, D. K., BENNET, G., HAGUE, J. F., JENNINGS, R. E., PARSONS, A. S. L. (with Whitehead, C., West, D., Bird, L., Auld, E. G., Crabb, D. G., McEwen, J. G., Oh, R.), A spark chamber experiment on the reaction $\pi^- + P \rightarrow n + \pi^+ + \pi^-$ at 3.1–3.6 GeV/c. *Nuclear Phys.*, B 48 (1972), 365–91.

AITKEN, D. K., JONES, B., The 8 to 13 μm spectrum of Jupiter. *Nature, Lond.*, 240 (1972), 230–2.

BARTLEY, J. H., MILLER, D. J. (with Mayeur, C., Van Birnet, P., Wilquet, G., Fliagine, V. B., Guy, J. G., Knight, W. L., Tovey, S. N., Dowd, R. M., Govan, M., Sanders, A. J., Schneps, J., Wolsky, G.,

Azemoon, T., Stannard, F. R.), A measurement of the Ξ° hyperon lifetimes and α-parameters. *Nucl. Phys.*, B 47, (1972), 333–47.

BATCHELOR, A. S. J., BROCKLEHURST, M., Radial velocities from the radio recombination lines of Orion A. *Mon. Not. R. astr. Soc.*, 160 (1972), 27.

BLADES, J. C., BENNEWITH, P. D., The interstellar spectrum of HD 154368. *Mon. Not. R. astr. Soc.*, 161 (1973), 213–16.

BOKSENBERG, A., The detection system for the International Ultraviolet Explorer Satellite. *Proc. Symp. Astronomical Observations with Television-Type Sensors, University of British Columbia, Vancouver, 15-17 May, 1973*, ed. J. W. Glaspey and G. A. H. Walker. Vancouver: University of British Columbia, 1973, 311–31.

(with Gérard, J.-C.), Ultraviolet observations of equatorial dayglow above the F_2 peak. *J. Geophys. Res.*, 78 (1973), 4641.

BOKSENBERG, A., ANDERSON, B. E. (with Sturgell, C. C., Williams, J. T., Feibelman, W. A., Mackrell, G. E., Jones, T. J. L.), Application of new ultraviolet television detectors in an astronomical satellite. *Advances in Electronics and Electron Physics. Proc. 5th Symp. Photo-Electronic Image Devices, Imperial College London, 13-17 September, 1971*, ed. J. D. McGee, D. McMullan, E. Kahan. London: Academic Press, 1972, 911–24.

BOKSENBERG, A., BURGESS, D. E., An image photon counting system for optical astronomy. *Advances in Electronics and Electron Physics. Proc. 5th Symp. Photo-Electronic Image Devices, Imperial College London, 13-17 September, 1971*, ed. J. D. McGee, D. McMullan, and E. Kahan. London: Academic Press, 1972, 835–49.

The University College London image photon counting system: performance and observing configuration. *Proc. Symp. Astronomical Observations with Television-Type Sensors, University of British Columbia, Vancouver, 15-17 May, 1973*, ed. J. W. Glaspey and G. A. H. Walker. Vancouver: University of British Columbia, 1973, 21–43.

BOKSENBERG, A., KIRKHAM, B., TOWLSON, W. A., VENIS, T. E. (with Bates, B., Courts, G. R., Carson, P. P. D.), Interstellar magnesium abundances and electron density in the direction of Orion and Cassiopeia. *Nature, Phys. Sci.*, 240 (1972), 127–30.

BOKSENBERG, A., WILSON, R. (with Barker, P., Butler, H. E., Gardier, S., Houziaux, L., Humphries, C., Jamar, C., Macau-Hercot, D., Malaise, D., Monfils, A., Nandy, K., Thompson, G. I., Wroe, H.), Astrophysique spatiale. *C.R. Acad. Sci. Paris*, ser. B, 276 (1973), 199–202.

BRABBAN, D. H., GLENCROSS, W. M., Lines of Fe XVII and Fe XVIII observed during a solar flare. *Nature, Phys. Sci.*, 244 (1973), 67.

BROCKLEHURST, M., SEATON, M. J., On the interpretation of radio recombination line observations. *Mon. Not. R. astr. Soc.*, 157 (1972), 179–210.

Observations of radio recombination lines. *Comments on Atomic & Molecular Physics*, iii (1972), 113–20.

BRUTON, P. C., CURRAN, C. S., DAVIES, J. K., FISHER, S. M., HEYMANN, F. F., IMRIE, D. C., LUSH, G. J. (with Ekelöf, T., Herz, A. J., Hagberg, E., Kullander, S.), The coherent interaction of high energy protons with ^{4}He. *Proc. V. Int. Conf. High Energy Physics and Nuclear Structure, Uppsala, Sweden* (1973).

BULLOCK, F. W., ESTEN, M. J., JONES, T. W., MCKENZIE, J., MICHETTE, A. G., *et al.*, Preliminary results on the ratio of antineutrino to neutrino cross-sections. *Europhysics Conf. Proc.*, vol. II, ed. A. Frenkel and G. Marx. Budapest: Omkdk-Technoiform, 1972, 29–38.

BULLOCK, F. W., ESTEN, M. J., JONES, T. W., MCKENZIE, J., MICHETTE, A. G., PINFOLD, J., *et al.*, Search for neutral currents in 'Gargamelle'. *Europhysics Conf. Proc.*, vol. I, ed. A. Frenkel and G. Marx. Budapest: Omkdk-Technoiform, 1972, 229–37.

BULLOCK, F. W., ESTEN, M. J., JONES, T. W., MCKENZIE, J., MICHETTE, A. G., SCHAFER, R. H., WORTHINGTON, R. G., *et. al.*, Observation of 'elastic' hyperon production by antineutrinos. *Phys. Letters*, 40B (1972), 593–6.

BURHOP, E. H. S., Opening remarks to the International Conference on Inner Shell Ionization Phenomena. *Proc. Int. Conf. Inner Shell Ionization Phenomena and Future Applications, Atlanta, Georgia, April 17-22, 1972*. Oak Ridge, Tennessee: U.S. Atomic Energy Commission, 1973, 2–7.

The interaction of K^- mesons with nuclei. *Nucl. Phys.*, B, 44 (1972), 445–59.

The inner shell ionization of atoms by electron impact. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), L241.

Science in contemporary society—is there a crisis? *Science, Medicine and Man*, 1 (1973), 75–85.

(with Asaad, W. N.), The auger effect. *Advances in Atomic and Molecular Physics*, ed. D. R. Bates, New York: Academic Press, 1972, 164–284.

CANTER, K. F., COLEMAN, P. G., GRIFFITH, T. C., HEYLAND, G. R., Total cross-section measurement for 2-400 eV positrons in the rare gases. *Proc. 8th Int. Conf. Physics of Electronic and Atomic Collisions, 16-22 July, 1973, Belgrade*, ed. B. C. Cobic and M. B. Kurepa. Belgrade: Institute of Physics, 1973, 489.

Measurement of total cross-sections for low energy positron–helium collisions. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), L167–9.

The measurement of total cross-sections for positrons of energies 2-400 eV in He, Ne, Ar and Kr. *Ibid.*, 6 (1973), L666–8.

COLMAN, P. G., GRIFFITH, T. C., HEYLAND, G. R., A time of flight method of investigating the emission of low energy positrons from metal surfaces. *Proc. roy. Soc.*, A, 331 (1973), 561–9.

CROSS, JEAN A., False peaks in the energy distribution of secondary electrons measured with a spherical retarding field analyser. *J. Phys.*, D, *Appl. Phys.*, 6 (1973), 622–7.

CULHANE, J. L. (with Acton, L. W., Catura, R. C., Meyerott, A. J., Wolfson, C. J.), Coronal survey in X-rays of O VII and Ne IX. *Sol Phys.*, 26 (1972), 183–201.

CULHANE, J. L., FABIAN, A. C., Circuits for pulse rise time discrimination in proportional counters. *Trans. I.E.E.E.*, NS-19 (1972), 569–78.

DAVIS, D. H. (with Adamovic, O., Krecker, U., Coremans-Bertrand, G., Sacton, J., Cantwell, T., Ni Ghogain, C., Kielczewska, D., Tymieniecka, T., Zakrzewski, J.), On the decay mode $^4H \rightarrow \pi^- + {}^3He + n$. *Nuovo Cim. Lett.*, 6 (1973), 9–12.

(with Bohm, G., Klabuhn, J., Krecker, U., Wysotzki, F., Coremans-Bertrand, G., Sacton, J., Wilquet, G., Cantwell, T., Esmael, F., Montwill, A., Kielczewska, D., Pniewski, T., Tymieniecka, T., Zakrzewski, J.), A

new determination of the binding-energy values of the light hypernuclei ($A \leqslant 15$). *Nucl. Phys.*, B, 52 (1973), 1–30.
(with Juric, M., Bohm, G., Krecker, U., Coremans-Bertrand, G., Sacton, J., Cantwell, T., Moriarty, P., Montwill, A., Kielczewska, D., Tymieniecka, T., Zakrzewski, J.), Confirmation of the existence of a particle-unstable state of the ^{12}C hypernucleus. *Nucl. Phys.*, B, 47 (1972), 36–42.

DAVIS, D. H., TOVEE, D. N. (with Bohm, G., Krecker, U., Wysotzki, F., Adamovic, O., Coremans-Bertrand, G., Sacton, J., Wickens, J. H., Cantwell, T., Ni Ghogain, C., Montwill, A., Garbowska-Pniewska, K., Pniewski, T., Zakrzewski, J.), A determination of the masses of the charged hyperons. *Nucl. Phys.*, B, 48 (1972), 1–12.
(with Velde-Wilquet, C. V., Keyes, G. S., Sacton, J., Wickens, J. H.), The probability of absorption of K^--mesons at rest on free protons in propane. *Nuovo Cim. Lett.*, 5 (1972), 1099–103.

DUBAU, J., WELLS, J., Calculated photoionization cross sections for Be and Mg. *J. Phys.*, B, *Atom. Molec. Phys.*, 6 (1973), 131–3.

DUFF, B. G., Lepton production at the ISR. *Proc. Mtg. 'Links between weak and electromagnetic interactions'*, Rutherford Laboratory, Chilton, Didcot (1973).

DUFF, B. G., HEYMANN, F. F., POTTER, K. M., QUARRIE, D. R., SHARROCK, S. J. (with Lintern, L. A., Manning, G., Pitts, P. R., Sharp, P. H., Gibson, W. M., Malos, J., Smith, V. J., Birge, R. W., Cence, R. J.), Observation of muons at large angles from CERN ISR. *Proc. XVI Int. Conf. on High Energy Physics, Batavia*, ed. J. D. Jackson, A. Roberts and R. Donaldson. Chicago, 1972, 358–70.
et al., Inclusive particle production at large angles measured at the CERN ISR. *Proc. IV Int. Conf. High Energy Collisions, Oxford*, ed. J. R. Smith. Chilton: Rutherford High Energy Laboratory, 1972, 197–213. (Stony Brook series.)
et al., A search for large transverse momentum muons at the ISR. *Ibid.*, 214–17.

DUFF, B. G., HEYMANN, F. F., QUARRIE, D. R. (with Bøggild, H., Jarlskog, G., Lynch, G., Alper, B., Weiss, J. M., Bulos, F., Booth, P., Carroll, L. J., Jackson, J. N., Prentice, M., von Dardel, G., Jonsson, L., Damgaard, G., Hansen, K. H., Lohse, E., Leistam, L., Klovning, A., Lillethun, E.), Production of high transverse momentum particles in p-p collisions in the central region at the CERN ISR. *Phys. Letters*, 44 B, (1973), 521–6.
(with Bøggild, H., Jarlskog, G., Lynch, G., Booth, P., Carroll, L. J., Jackson, J. N., Prentice, M., von Dardel, G., Jonsson, L., Damgaard, G., Alper, B., Weiss, J. M., Bulos, F., Manning, G., Leistam, L., Klovning, A., Lillethun, E.), Inclusive charged particle production at large angles at the CERN ISR. *Proc. Int. Conf. New Results from Experiments on High-Energy Particle Collisions, Vanderbilt University, Nashville* (1973).

DUFF, B. G., POTTER, K. M., QUARRIE, D. R., SHARROCK, S. J. with Bøggild, H., Jarlskog, G., Alper, B., Weiss, J. M., Bulos, F., Lee, W., Manning, G., Sharp, P., Booth, P., Carroll, L. J., Jackson, J. N., Prentice, M., von Dardell, G., Damgaard, G., Leistam, L., Klovning, A., Lillethun, E.), Particle composition at high transverse momenta in p-p collisions in the central region at the CERN ISR. *Phys. Letters*, 44 B (1973), 527–9.

DUFF, M. J. B., WATSON, D. M. (with Arcelli, C., Levialdi, S.), Connectivity extraction by hexagonal iterative arrays. *Atti de II Congresso Nazionale di Cibernetica, Casciana Terme*, ed. M. A. Baldocchi. Pisa: Lito Felice, 1972, 271–8.

EISSNER, W., SEATON, M. J., Computer programmes for the calculation of electron-atom collision cross sections. I. General formulation. *J. Phys.*, B, *Atom Molec. Phys.*, 5 (1972), 2187–98.

EMERSON, J. P., JENNINGS, R. E., MOORWOOD, A. F. M., RCW 117 and DR 15 observed in the far infrared. *Nature, Phys. Sci.*, 241 (1973), 108–9.

ERMOLAEV, A. M., JONES, M., The singlet-triplet correction in the fine structure of two-electron ions. *J. Phys., B, Atom. Molec. Phys.*, 5 (1972), L225–8.

A perturbation analysis of current methods of calculating relativistic energies. *Ibid.*, 6 (1973), 1–22.

ERMOLAEV, A. M., JONES, M., PHILLIPS, K. J. H., Accurate calculations of wavelengths of certain helium-like lines in the X-ray region. *Astrophys. Letters*, 12 (1972), 53–6.

EZRA, D., Coherent photoproduction of π^+ from H^{e3}. *Letters al Nuovo Cim.*, 6 (1973), 317–20.

FABIAN, A. C., Non-solar X-ray astronomy. *Earth and Extraterrestrial Sci.*, 2 (1973), 83–7.

FABIAN, A. C., ZARNECKI, J. C., CULHANE, J. L., The soft X-ray structure of Cassiopeia A. *Nat. Phys. Sci.*, 242 (1973), 18–20.

FOSTER, E. W., Richardson, Sir Owen Willans. *The Dictionary of National Biography* 1951–1960, ed. E. T. Williams and H. F. Palmer. Oxford University Press, 1971, 839–41.

FURNISS, I., JENNINGS, R. E., MOORWOOD, A. F. M., Detection of far-infrared astronomical sources. *Ap. J.*, 176 (1972), L105–8.

GLENCROSS, W. M., Continuous energy injection at numerous bright points during soft X-ray flare enhancement. *Sol. Phys.*, 29 (1973), 429–39.

GLENCROSS, W. M., CRAIG, I. J. D., Periodic heating mechanism in solar flares. *Nat. Phys. Sci.*, 238 (1972), 50–2.

GROVES, G. V., Atmospheric structure and its variations in the region from 25 to 120 km. *COSPAR Int. Reference Atmosphere 1972, Pt II*, ed. A. C. Stickland. Berlin: Akademie-Verlag, 1973, 33–224.

Annual and semi-annual zonal wind components and corresponding temperature and density variations, 60–130 km. *Planet. Space Sci.*, 20 (1972), 2099–112.

The structure of the atmosphere up to 150 kilometres. *Contemp. Phys.*, 14 (1973), 1–24.

Zonal wind quasi-biennial oscillations at 25–60 km altitude, 1962–69. *Quart. J. R. Met. Soc.*, 99 (1973), 73–81.

HASTED, J. B., Specialist periodical report. *Dielectric and Related Molecular Processes*, vol. I, ed. Mansel Davies. London: Chemical Society, 1972, 121–62.

Water in crystalline hydrates; aqueous solutions of simple nonelectrolytes. *Water—A Comprehensive Treatise*, vol. II, ed. F. Franks. New York and London: Plenum Press, 1973, 405–56.

HASTED, J. B., AWAD, G. L., Electron impact ionization of ions trapped in a hollow electron beam. *J. Phys.*, B, 5 (1972), 1719–34.

HAWKINS, F. J., MASON, K. O., SANFORD, P. W., Determination of the position of GX2+5 with Copernicus. *Nat. Phys. Sci.*, 241 (1973), 109–11.

HERRING, J. R. H., CRAIG, I. J. D., Two-component temperature analysis of OSO-5 X-ray flare data. *Sol. Phys.*, 28 (1973), 169–74.

HEYMANN, F. F., The intersecting storage rings of CERN. *Endeavour*, xxxii (1973), 81–5.

JONES, T. W., The life cycle of stars. *The Scientist*, 10 (1972), 146–51.
Modern ideas in cosmology. *Ibid.*, 199–202.
Why do physics? *The School Leaver*, 4 (1973), 34–5.

KNIGHT, D. E., URIBE, R., WOODGATE, B. E., Low latitude density variations in the Earth's neutral atmosphere between 200 and 400 km, from August 1969 to May 1970. *Planet. Space Sci.*, 21 (1973), 253–71.

KOSMIDER, R. G., HASTED, J. B., BIRKINSHAW, K., A variable length drift tube for studying ionic reactions. *6th Yugoslav Symp. Physics of Ionized Gases*, 1972 (1972), 59–62.

MCKENZIE, J. (with Fetkovich, J. G., Riley, B. R., Wang, I.-T., Derrick, M., Fields, T., Hyman, L. G., Keyes, G.), Properties of ΛHe^4. *Phys. Rev.*, D, 6 (1972), 3069–85.

MCNALLY, D., Interstellar molecules: their formation and destruction. *Adv. At. Mol. Phys.*, 8 (1972), 1–38.
Per Ardua ad Astra: the education of a British astronomer. *Ann. N.Y. Acad. Sci.*, 198 (1972), 95–103.

MARTIN, B. R. C., Low-energy $\bar{k}N$ scattering: amplitudes and dispersion relations. *Text Book on Elementary Particle Physics*, ed. M. Nikolic. Strasbourg: Laboratoire de Physique Corpusculaire, 1972, 52 pp.
K^+p dispersion relations. II. Epsilon exchange. *Nucl. Phys.*, B, 45 (1972), 102–8.
(with Chao, Y.-A., Kraemer, R. W., Thomas, D. W.), $\bar{k}N$ data and V(1405). *Nucl. Phys.*, B, 56 (1973), 46–51.
(with Lea, A. T., Moorhouse, R. G., Oades, G. C.), Multichannel analysis of $\bar{k}N$ data 0.4–1.2 GeV/c. *Nucl. Phys.*, B, 56 (1973), 77–89.

MARTIN, B. R. C., MILLER, C. E., Dispersion relation analysis of K^+p scattering below 2 GeV/c. *Nucl. Phys.*, B, 45 (1973), 227–36.

MASSEY, H. S. W., Atomic and molecular reactions in space. *From Plasma to Planet. Nobel Symp. 21*, ed. Aina Elvius. Stockholm: Almquist & Wiskell, 1972, 17–36.
Atom-atom and atom-ion collisions. III. Collisions involving excitation transfer, spin exchange or depolarization, without internal energy change. *Contemp. Phys.*, 13 (1972), 375–92.
Nuclear physics today and in Rutherford's day. *Notes and Records Roy. Soc.*, 27 (1972), 25–44.
Neutrinos. *Endeavour*, xxxii (1973), 86–92.

MILLER, D. J., Neutral detection in BEBC at the SPS. *300GeV Working Group Report*, CERN/ECFA/72/4/1 (1972), 13–30.
(with Beilliere, P., Mayeur, C., Wilquet, G., Fliagine, V. B., Guy, J. P., Knight, W. L., Tovey, S. N., Armenian, H. K., Govan, M., Schneps, J., Wolsky, G., Azemoon, T., Nassalski, J.), An enhancement in the $\Lambda\Lambda$ invariant mass spectrum. *Phys. Letters*, 39B (1972), 671–4.
(with Bingham, H. H., Farwell, C. W., Fretter, W. B., Irwin, G. M., Kann, S., Lu, A., Daugeras, B., Fournier, D., Hennessy, J., Novak, M.,

Veillet, J. J., Cnops, A. M., Huson, F. R., Louttit, R. I., O'Neall, J. S., di Corate, M., Rollie, M., Bouthet, C., Crussard, J., Ginestet, J.), Coherent production of multimeson final states on A≃20 nuclei by K^- of 5.5, 10.0, 12.7 GeV/c. *Nucl. Phys.*, B, 52 (1973), 31–69.

MOORES, D. L. (with Norcross, D. W.), Photodetachment of Li^- and Na^-. *Atomic Physics 3 Proc. 3rd Int. Conf. Atomic Physics, 1972, Boulder, Colorado*, ed. S. J. Smith and G. K. Walters. New York and London: Plenum Press, 1973, 261–7.

(with Norcross, D. W.), The scattering of electrons by sodium atoms. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), 1482–505.

PEACH, G., SEATON, M. J., Pressure broadening of radio recombination lines. *Comments on Atomic & Molecular Physics*, iii (1972), 107–12.

RAITT, W. J., BOWLING, T. S., WILLMORE, A. P. (with Blades, J.), A satellite-borne positive ion mass spectrometer. *J. Phys.*, E, *Sci. Instrum.*, 6 (1973), 443–52.

RAITT, W. J., CLARK, D. H., Wave-like disturbances in the ionosphere. *Nature, Lond.*, 243 (1973), 508.

RAPLEY, C. G. (with Porter, R. A., Spencer, R. E.), The impulsive radio noise environment at a quiet site. *J. Atmos. Terr. Phys.*, 35 (1973), 1421–5.

REES, D. (with Aggson, T. L., Burrows, K., Haerendel, G., Rieger, E., Lloyd, K. H., Wilson, J. W. G., Dorling, E. B., Wrenn, G. L.), Investigation of mid-latitude ionospheric currents by combined rocket techniques. *Space Research, XIII*, ed. M. J. Rycroft and S. K. Runcorn. Berlin: Akademie-Verlag, 1973, 449–55.

(with Aggson, T. L., Burrows, K., Haerendel, G., Wilson, J. W. G.), Diurnal and seasonal variations of neutral winds and electric fields above 90 km in the vicinity of the auroral electrojet. *Ibid.*, 511–17.

(with Haerendel, G., Felgate, D. G., Lloyd, K. H., Low, C. H.), Thermospheric observations combining chemical seeding and ground-based techniques. II. Ionospheric drifts and the Sq current system. *Planet. Space Sci.*, 21 (1973), 1237–49.

REES, D., NEAL, M. P. (with Low, C. H., Hind, A. D., Burrows, K., Fitchew, R. S.), Neutral wind measurement during daytime in the thermosphere. *Nature, Lond.*, 240 (1972), 32–3.

ROGERS, C., WILKIN, C., The effect of inelastic scattering on the determination of unstable particle cross-sections. *Nucl. Phys.*, B, 45 (1972), 47–60.

SANFORD, P. W., HAWKINS, F. J., X-ray observations of Cygnus X-3 by Copernicus. *Nat. Phys. Sci.*, 239 (1972), 135.

SARAPH, H. E., SEATON, M. J. (with le Dourneuf, M., Vo Ky Lan), A critical discussion of previous close-coupling calculations for atomic oxygen. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), L87–90.

SEATON, M. J., The spectra of gaseous nebulae. Atoms and molecules in astrophysics. *Proc. 12th NATO Scottish Univ. Summer School*, ed. T. R. Carson and M. J. Roberts. London and New York: Academic Press, 1972, 121–53.

University College London: theoretical atomic physics and astrophysics (Department of Physics). *Quart. J. R. astr. Soc.*, 13 (1972), 106–8.

(with Norcross, D. W.), Asymptotic solutions of the coupled equations of electron-atom collision theory for the case of some channels closed. *J. Phys.*, B, *Atom. Molec. Phys.*, 6 (1973), 614–21.

(with Wilson, P. M. H.), A polarized core approximation for atomic structure calculations. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), L175–7.

SHEATHER, P. H., The support of thin windows for X-ray proportional counters. *J. Phys.*, E, *Sci. Instrum.*, 6 (1973), 319–22.

STUMPEL, J. W., SANFORD, P. W., GODDARD, H. F., A position sensitive proportional counter with high spatial resolution. *J. Phys.*, E, *Sci. Instrum.*, 6 (1973), 397–400.

THOMAS, M. A., HUMBERSTON, J. W., The polarizability of helium. *J. Phys.*, B, *Atom. Molec. Phys.*, 5 (1972), L229–32.

WILSON, R., BOLAND, B. C., ENGSTROM, S. F. T., JONES, B. B., The heating of the solar corona. *Astron. & Astrophys.*, 22 (1973), 161–9.

WILSON, R., BOLAND, B. C., ENGSTROM, S. F. T., JONES, B. B., MCWHIRTER, R. W. P., THONEMAN, P. C., Observations of the profiles of solar UV emission lines and their analysis in terms of the heating and production of the corona. *Space Sci. Revs*, 13 (1972), 639–41.

WOODGATE, B. E., KNIGHT, D. E., URIBE, R., SHEATHER, P., BOWLES, J. (with Nettleship, R.), Extreme ultraviolet line intensities from the Sun. *Proc. roy. Soc.*, A, 332 (1973), 291–309.

WRAY, D. A. (with Soffer, J.), Comments on spin effects in proton-proton cross section measurements. *Phys. Letters*, 43B (1973), 514.

WRENN, G. L., CLARK, D. H., RAITT, W. J. (with Carlson, H. C.), Modulation Langmuir probe and incoherent scatter radar measurements of ionospheric electron temperature. *J. Atmos. Terr. Phys.*, 35 (1973), 405–13.

ZARNECKI, J. C., CULHANE, J. L., FABIAN, A. C., RAPLEY, C. G. (with Silk, R., Parkinson, J., Pounds, K. A.), A low energy X-ray map of the Puppis-A Supernova Remnant. *Nat. Phys. Sci.*, 243 (1973), 4–5.

PSYCHOLOGY

AUDLEY, R. J., Some observations on theories of choice reaction time: tutorial review. *Attention and Performance*, vol. IV, ed. S. Kornblum. London and New York: Academic Press, 1972, 509–45.

BELBIN, EUNICE (with Belbin, R. M.), *Problems of Adult Retraining*. London: Heinemann, 1972. 203 pp.

CROMER, R. F., The learning of linguistic surface feature cues to deep structure by educationally subnormal children. *Amer. J. Ment. Deficiency*, 77 (1972), 346–53.

The development of language: one possible mechanism of acquisition. *Bull. Brit. Psychol. Soc.*, 26 (1973), 142–3.

DE MONCHAUX, CECILY (with Davies, T. W.), Mood changes in relation to personality and the excretion of 3-methoxy-4-hydroxy-mandelic acid. *Psychom. Med.*, 35 (1973), 205–14.

DOWNS, SYLVIA, Trainability—a new look at selection. *Maker-Up*, 67 (1972), 664–6.

DREW, G. C., On applied psychology in Britain, *Bull. Brit. Psychol. Soc.*, 26 (1973), 191–7.

FRITH, UTA, Cognitive mechanisms in autism: experiments in colour and tone sequence production. *J. Autism & Childhood Schizophrenia*, 2 (1972), 163–73.

HAGGER, ANN, School-hour shifts for middle-aged women. *Indust. & Com. Training* (June 1973), 296–7.

HERMELIN, BEATE, Locating events in space and time: experiments with autistic, blind, and deaf children. *J. Autism & Childhood Schizophrenia,* 2 (1972), 288–98.

JOHNSON-LAIRD, P. N., The three-term series problems. *Cognition,* 1 (1972), 57–82.

(with Legrenzi, M., Legrenzi, P.), Reasoning and a sense of reality. *Brit. J. Psychol.,* 63 (1972), 395–400.

(with Tridgell, J. M.), When negation is easier than affirmation. *Quart. J. exp. Psychol.,* 24 (1972), 87–91.

JONES, SHEILA HEYWOOD, Imagery in a short-term memory task. *Psychonom. Sci.,* 29 (1972), 76–8.

OAKLEY, D. A., RUSSELL, I. S., Acquisition, differentiation and reversal of conditioning in partially decorticate rabbits. *J. Int. Res. Comm. Med. Sci.,* 1 (1973), 56.

O'CONNOR, N., Brain injury and mental subnormality. *The Brain in Unclassified Mental Retardation,* ed. J. B. Cavanagh. Edinburgh: Churchill Livingstone, 1972, 243–54.

O'CONNOR, N., FRITH, UTA, Cognitive development and the concept of set. *Psychological Investigations: A Commemorative Volume Dedicated to the 85th Anniversary of the Birth of D. Uznadze,* ed. A. Prangishvili. Tbilisi: Izdatelstvo Metsniereba, 1973, 17–21.

O'CONNOR, N., HERMELIN, BEATE, Seeing and hearing in space and time. *Perc. & Psychophys.,* 11 (1972), 46–8.

The re-ordering of the three-term series by blind and sighted children. *Brit. J. Psychol.,* 63 (1972), 381–6.

RUSSELL, I. S., Differential role of cerebral cortex in classical conditioning. *Tecrubi Psikoloji Calismalari,* 10 (1972), 1–5.

Lateralization of brightness and pattern discrimination learning in the corpus callosum-sectioned rat. *Brain Res.,* 47 (1972), 11.

(with Davenport R. K., Rogers, C. M.), Cross-modal perception in apes. *Neuropsychologia,* 11 (1973), 21–8.

(with File, S.), Specificity of behavioural habituation in the rat. *Quart. J. exp. Psychol.,* 24 (1972), 465–73.

SMITH, M. C., PEARN, M. A., Conventional lecture versus discovering training methods in the preparation of immigrant bus conductors. *J. Cross-Cultural Psychol.,* 3 (1972), 407–12.

STATISTICS AND COMPUTER SCIENCE

BROOKS, R. J., A decision theory approach to optimal regression designs. *Biometrika,* 59 (1972), 563–71.

DAWID, A. P., STONE, M., Expectation consistency of inverse probability distributions. *Biometrika,* 59 (1972), 486–9.

Expectation consistency and generalized Bayes inference. *Ann. Statist.,* 1 (1973), 478–85.

FREEMAN, P. R., *Table of d′ and β.* Cambridge University Press, 1973. 104 pp.

Sequential recapture. *Biometrika,* 60 (1973), 141–53.

Hypergeometric probabilities. *Applied Statistics,* 22 (1973), 130–3.

GALBRAITH, R. F. (with Welberry, T. R.), A two-dimensional model of growth disorder. *J. Applied Crystallography,* 6 (1973), 87–96.

LINDLEY, D. V., Bayesian statistics. *Bull. Inst. Math. Appl.,* 8 (1972), 183–7.

STONE, M., Role of experimental randomization in Bayesian statistics: an asymptotic theory for a single Bayesian. *Metrika,* 20 (1973), 11–17.

STONE, M., DAWID, A. P., Un-Bayesian implications of improper Bayes inference in routine statistical problems. *Biometrika,* 59 (1972), 369–75.

WEBB, G. I. (with Berenblut, I. I.), A new test for autocorrelated errors in the linear regression model. *J. R. statist. Soc.,* B, 35 (1973), 33–50.

ZOOLOGY AND COMPARATIVE ANATOMY

COMFORT, A., Measuring the human ageing rate. *Mech. Aging Devel.,* 1 (1972), 101–10.

Accelerated ageing in young mothers of children with Downs-syndrome. *Lancet,* ii (1972), 537.

Understanding sexual realities. *Ibid.,* ii (1972), 1353.

Effect of procaine on ageing. *Ibid.,* i (1973), 1193.

Behaviour therapy for sex problems. *Ibid.,* i (1973), 1295–7.

DE PETRIS, S., RAFF, M. C., Distribution of immunoglobulin on the surface of mouse lymphoid cells as determined by immunoferritin electron microscopy. Antibody induced, temperature dependent redistribution and its implications for membrane structure. *Eur. J. Immunol.,* 2 (1972), 523–35.

Normal distribution, patching and capping of lymphocyte surface immunoglobulin studied by electron microscopy. *Nature, New Biol.,* 241 (1973), 257–9.

FELDMANN, M., Cellular basis of antibody production. *Quart. Rev. Biol.,* 47 (1972), 260–302.

(with Nossal, G. J. V.), Tolerance, enhancement and the regulation of interactions between T cells, B cells and macrophages. *Transpl. Rev.,* 13 (1972), 3–34.

FISHER, R. C., Contributions on various orders of insects to *Elsevier's Animal Encyclopaedia.* Amsterdam: Elsevier, 1972.

(with Fisher, H. J.), *The Young Specialist looks at Pondlife* by W. Engelhardt (2nd revised ed.). London: Burke, 1973, 208 pp. (Transl. edited, and adapted from: W. Engelhardt and H. Merxmuller, *Was lebt in Tumpel, Bach und Weiher?* Franckshe Verlagshandlungen. Stuttgart: W. Keller, 1962.

FOX, H., Tissue degeneration: an electron microscopic study of the tail skin of *Rana temporaria* during metamorphosis. *Arch. Biol.* (*Liège*), 83 (1972), 373–94.

Sub-dermal and notochordal collagen degeneration in the tail of *Rana temporaria*: an electron microscopic study. *Ibid.,* 395–405.

Muscle degeneration in the tail of *Rana temporaria* larvae at metamorphic climax: an electronic microscopic study. *Ibid.,* 407–17.

Ultrastructure of tail degeneration in *Rana temporaria* larvae. *Fol. Morph. Praha,* 21 (1973), 109–12.

Degeneration of the tail notochord of *Rana temporaria* at metamorphic climax. Examination by electron microscopy. *Z. Zellforsch. mikrosk. Anat.*, 138 (1973), 371–86.

FOX, H., MAHONEY, R. (with Bailey, E.), Aspects of the ultrastructure of the alimentary canal and respiratory ducts in *Xenopus laevis* larvae. *J. Morph.*, 138 (1972), 387–406.

FREEMAN, R. B., Advisory Editor, *A Supplement to the Oxford English Dictionary, Vol. I, A-G*. Oxford: Clarendon Press, 1972. 1331 pp.
Introduction and Editor, *Classification of the Animal Kingdom, an illustrated guide*. London: The English Universities Press, 1973. 55 pp.
Issues and states of Charles Darwin's *The Expression of the Emotions in Man and Animals. Book Collector*, 21 (1972), 557–8.
Offprints of Darwin's *Climbing Plants*, 1865. *J. Soc. Biblphy. nat. Hist.*, 6 (1973), 293.

GREAVES, M. (with Janossy, G.), Elicitation of selective T and B lymphocyte responses by cell surface binding ligands. *Transpl. Rev.*, 11 (1972), 87–130.
(with Janossy, G., Shohat, M., Dourmashkin, R. R.), Lymphocyte activation. IV. The ultrastructural pattern of the response of mouse T and B cells to mitogenic stimulation *in vitro*. *Immunology*, 24 (1973), 211–27.
(with Parkhouse, R. M. E., Janossy, G.), Selective stimulation of IgM synthesis in mouse B lymphocytes by Pokeweed mitogen. *Nature, New Biol.*, 235 (1972), 21–3.

GREAVES, M. F., HOGG, N. M., Inhibition of rosette formation by antisera to cell surface determinants: an approach to the antigen receptor problem. *Transpl. Proc.*, 4 (1972), 351–6.

HEAYSMAN, J. E. M., PEGRUM, S. M., Early contacts between fibroblasts—an ultrastructural study. *Exp. Cell Res.*, 78 (1973), 71–8.
Early contacts between normal fibroblasts and mouse sarcoma cells—an ultrastructural study. *Ibid.*, 479–81.
(with Abercrombie, M.), Mechanism of cell movement. *Cell Differentiation*, ed. R. Harris, P. Allen, and D. Viza. Munksgaard: Scandinavian University Books, 1972, 46–8.
(with Abercrombie, M.), The locomotion of fibroblasts in culture. V. Surface marking with concanavalin A. *Exp. Cell Res.*, 73 (1972), 536–9.

HOGG, N. M., GREAVES, M., Antigen binding thymus-derived lymphocytes. I. Rapid method for isolation of theta-positive antigen-stimulated cells. *Immunology*, 22 (1972), 959–65.
II. Nature of the immunoglobulin determinants. *Ibid.*, 967–80.

IVERSON, G. M. (with Lindenmann, J.), The role of a carrier-determinant and T cells in the induction of liver-specific autoantibodies in the mouse. *Eur. J. Immunol.*, 2 (1972), 195–7.

JEWELL, P. A., Social organisation and movements of topi (damaliscus korrigum) during the rut, at Ishasha, Queen Elizabeth Park, Uganda. *Zoologica Africana*, 7 (1972), 233–55.

MIDDLETON, C. A., The control of epithelial cell locomotion in tissue culture. *Locomotion of Tissue Cells, Ciba Foundation Symp.*, 14 (1973), 251–70.

O'DELL, D. S., Medical effects of pollutants. *Industrial Pollution Control*, ed. K. A. Tearle. London: Business Books, 1973, 22–8.
Chalones. *F.E.B.S. Letters*, 26 (1972), 1–5.

Concanavalin A: effect on membrane formation in sea urchin embryos. *Cytobios,* 6 (1972), 91–6.
(with Brachet, J., Steinert, G., Tencer, R.), Clearage nucleoli and ribosomal RNA synthesis in sea urchin embryos. *Exp. Cell Res.,* 73 (1972), 463–8.
(with Monroy, A., Ortolani, G., Millonig, G.), Binding of concanavalin A to the surface of unfertilized and fertilized ascidian eggs. *Nature, Lond.,* 242 (1973), 409–10.

O'Dell, D. S., Preston, T. M., Membrane changes in Naegleria gruberia. *J. Protozool.,* 19 (1972), suppl. p. 50.

Preston, T. M., O'Dell, D. S., Deuterium-oxide induced reversion of *Naegleria gruberi* flagellates. *J. gen. Microbiol.,* 75 (1973), 351–61.

Raff, M. C., T and B lymphocytes in mice studied by using antisera against surface antigenic markers. *Amer. J. Path.,* 65 (1972), 467–78.
(with Ashman, R. F.), Direct demonstration of theta-positive antigen-binding cells, with antigen-induced movement of thymus-dependent cell receptors. *J. exp. Med.,* 137 (1973), 69–84.
(with Waksman, B. H., East, J.), T and B lymphocytes in New Zealand Black mice. An analysis of the theta, TL and MBLA markers. *Clin. Exp. Immunol.,* 11 (1972), 1–11.

Raff, M. C., De Petris, S., Movement of lymphocyte surface antigens and receptors: the fluid nature of the lymphocyte plasma membrane and its immunological significance. *Fed. Proc.,* 32 (1973), 48–54.

Raff, M. C., Feldmann, M., De Petris, S., Monospecificity of B lymphocytes. *J. exp. Med.,* 137 (1973), 1024–30.

Seeger, R. C., Owen, J. J. T., Measurement of tumor immunity *in vitro* with ^{125}I-iododeoxyuridine labelled target cells. *Transplantation,* 15 (1973), 404–8.

Smith, J. B., Iverson, G. M., Occurrence of liver-specific antigen in adult human serum. *Clin. Exp. Immunol.,* 13 (1973), 209–12.

Whitear, M., The location of silver in frog epidermis after treatment by Ranvier's method, and possible implication of the flask cells in transport. *Z. Zellforsch. mikrosk. Anat.,* 133 (1972), 455–61.

FACULTY OF ENGINEERING

CHEMICAL ENGINEERING

Barnard, J. A., Akbar Shaikh, M., Slow combustion of methyl vinyl ketone. *Pakist. J. scient. ind. Res.,* 15 (1972), 140–1.

Barnard, J. A., Lee, R. K.-Y., The combustion of *n*-pentane in a shock tube. *Combust. Sci. & Tech.,* 6 (1972), 143–50.

Barnard, J. A., Lee, R. K.-Y., Yates, J. G., Determination of kinetic data by shock-tube. *Chem. & Ind.,* No. 20 (1972), 810–12.

Barnard, J. A., Platts, A. G., Temperature changes in hydrogen-oxygen explosions. *Combust. Sci. & Tech.,* 6 (1972), 133–4.
The hydrogen-oxygen reaction in potassium chloride-coated vessels in the region of the third explosion limit. *Ibid.,* 177–86.

BARNARD, J. A., WATTS, A., The relationship between slow reaction and cool flames in combustion processes. *Combust. Sci. & Tech.*, 6 (1972), 125–31.

BURGESS, A. R., LAUGHLIN, R. G. W., The cool-flame oxidation of *n*-heptane. Pt I. The kinetic features of the reaction. *Combust. & Flame*, 19 (1972), 315–29.

CURRIE, J. A., DUNNILL, P., LILLY, M. D., Release of protein from bakers' yeast (*Saccharomyces cerevisiae*) by disruption in an industrial agitator mill. *Biotechnol. & Bioengng.*, xiv (1972), 725–36.

DUNNILL, P., The recovery of intracellular products. *Fermentation Technology Today* (*Proc. IVth Int. Fermentation Symp.*), ed. G. Terui. Japan: Soc. Ferment. Technol., 1972, 187–94.

DUNNILL, P., LILLY, M. D., Continuous enzyme isolation. *Biotechnol. & Bioengng. Symp.*, 3 (1972), 97–113.

EL NASHAIE, S., YATES, J. G., A model for competing reactions in gas fluidised beds. *Chem. Eng. Sci.*, 27 (1972), 1757–64.

Multiplicity of the steady state in fluidised bed reactors—I. Steady state considerations. *Ibid.*, 28 (1973), 515–20.

GARSIDE, J., MULLIN, J. W., DAS, S. N., Importance of crystal shape in crystal growth rate determinations. *Ind. Eng. Chem.* (*Process Des. & Develop.*), 12 (1973), 369–71.

GEYSEN, H. M., GRAY, P. P., A graphical method for optimizing fermentations. *Biotechnol. & Bioengng.*, xiv (1972), 857–60.

GIBILARO, L. G., WALDRAM, S. P., Dynamic compensation of transient responses and the evaluation of system moments. *Chem. Eng. Sci.*, 27 (1972), 1569–75.

The evaluation of system moments from step and ramp response experiments. *Chem. Eng. J.*, 4 (1972), 197–8.

GRAY, P. P., DUNNILL, P., LILLY, M. D., The continuous-flow isolation of enzymes. *Fermentation Technology Today* (*Proc. IVth Int. Fermentation Symp.*), ed. G. Terui. Japan: Soc. Ferment. Technol., 1972, 347–51.

Kinetics of β-galactosidase production by a constitutive mutant of *Escherichia coli*. *J. Ferment. Technol.*, 50 (1972), 381–7.

The clarification of mechanically disrupted yeast suspensions by rotary vacuum precoat filtration. *Biotechnol. & Bioengng.*, xv (1973), 309–20.

JONES, A. G., MULLIN, J. W., The design of a draft-tube agitated vessel. *Chem. & Ind.*, No. 8 (1973), 387–8.

LARSON, M. A., GARSIDE, J., Crystallizer design techniques using the population balance. *The Chem. Engr.*, No. 274 (1973), 318–28.

LILLY, M. D., The use of immobilised enzymes in the food industry. *Proc. Internat. Symp. on Conversion and Manufacture of Foodstuffs by Microorganisms, Kyoto, 1971*, 65–74.

The use of immobilised enzymes in reactors. *Proc. Conf. on Solid Phase Proteins, Battelle Research Institute, Seattle, 1971*, 75–7.

LILLY, M. D., BALASINGHAM, KANGA, WARBURTON, D., DUNNILL, P., Immobilised enzyme reactors. *Fermentation Technology Today* (*Proc. IVth Int. Fermentation Symp.*), ed. G. Terui. Japan: Soc. Ferment. Technol., 1972, 379–81.

LILLY, M. D., DUNNILL, P., Engineering aspects of enzyme reactors. *Biotechnol. & Bioengng. Symp.*, 3 (1972), 221–7.

MULLIN, J. W., Recent developments in the change-over to the International System of Units (SI). *J. Inst. Fuel,* 45 (1972), 208–13.
Solution concentration and supersaturation units and their conversion factors. *The Chem. Engr.,* No. 274 (1973), 316–17.
MULLIN, J. W., GASKA, C., Potassium sulphate crystal growth rates in aqueous solution. *J. Chem. & Engng. Data,* 18 (1973), 217–20.
MULLIN, J. W., OSMAN, M. M., The nucleation and precipitation of nickel ammonium sulphate crystals from aqueous solution. *Kristall und Technik,* 8 (1973), 471–81.
NIENOW, A. W., The Institution of Chemical Engineers' Working Party on the mixing of powders, pastes and non-Newtonian fluids. *J. Res. Assoc. of Powder Tech. (Japan),* 9 (1972), 27–36.
NIENOW, A. W., ANG, H. M., Particle suspension in Coulter Counter analysis. *Lab. Pract.,* 21 (1972), 495–6.
NIENOW, A. W., ROWE, P. N., AGBIM, A. J., The role of particle size and density difference in segregation in gas fluidised beds. *PACHEC '72, Kyoto, Japan,* 30–9.
ROBINSON, P. J., DUNNILL, P., LILLY, M. D., The properties of magnetic supports in relation to immobilized enzyme reactors. *Biotechnol. & Bioengng.,* xv (1973), 603–6.
Factors affecting scale-up affinity chromatography of β-galactosidase. *Biochim. biophys. Acta,* 285 (1972), 28–35.
ROWE, P. N., Recent fluidisation research at University College London. *Izvestija An S.S.S.R., Mekhanika Zhidkosti i Gasa,* No. 6 (1972), 50–60 (in Russian).
Fluidised bed reactors. Session Review, *Proc. 2nd Int. Symp. on Chemical Reaction Engineering, Amsterdam, 2–4 May 1972.* Amsterdam: Elsevier, 1972, A9–1–14.
Estimation of solids circulation rate in a bubbling fluidised bed. *Chem. Eng. Sci.,* 28 (1973), 979–80.
ROWE, P. N., NIENOW, A. W., AGBIM, A. J., The mechanisms by which particles segregate in gas fluidised beds—binary systems of near-spherical particles. *Trans. Instn. Chem. Engrs.,* 50 (1972), 310–23.
A preliminary quantitative study of particle segregation in gas fluidised beds—binary systems of near spherical particles. *Ibid.,* 324–33.
ROWE, P. N., WIDMER, A. J., Variation in shape with size of bubbles in fluidised beds. *Chem. Eng. Sci.,* 28 (1973), 980–1.
STREET, G., DUNNILL, P., LILLY, M. D. (with Glover, Vivette A. S.), Large scale isolation of choline acetyltransferase from ox brains. *Biotechnol. & Bioengng.,* xv (1973), 271–83.
WARBURTON, D., BALASINGHAM, K., DUNNILL, P., LILLY, M. D., The preparation and kinetics of immobilised penicillin amidase from *Escherichia coli. Biochim. biophys. Acta,* 284 (1972), 278–84.
WARBURTON, D., DUNNILL, P., LILLY, M. D., Conversion of benzylpenicillin to 6-aminopenicillanic acid in a batch reactor and continuous feed stirred tank reactor using immobilised penicillin amidase. *Biotechnol. & Bioengng.,* xv (1973), 13–25.
WYKES, J. R., DUNNILL, P., LILLY, M. D., The preparation of soluble high molecular weight NAD derivative active as a cofactor. *Biochim. biophys. Acta,* 286 (1972), 260–8.
YATES, J. G., CONSTANS, J. A. P., Residence time distributions in a

fluidised bed in which gas adsorption occurs: stimulus-response experiments. *Chem. Eng. Sci.*, 28 (1973), 1341–7.

YATES, J. G., ROWE, P. N., WHANG, S. T., The isomerisation of *n*-butenes over a fluidized silica-alumina catalyst. *Chemical Reaction Engineering, Advances in Chemistry Series 109*. Washington: American Chemical Society, 1972, 133–5.

CIVIL AND MUNICIPAL ENGINEERING

ALLSOP, R. E., Estimating the traffic capacity of a signalized road junction. *Transportation Res.*, 6 (1972), 245–55.

Delay at a fixed time traffic signal. I. Theoretical analysis. *Ibid.*, 260–85.

CROLL, J. G. A., Design considerations for the interaction of the ruled surface hyperbolic paraboloid and support structure. *Bull. Int. Assoc. Shell Structures*, No. 49 (1972), 21–6.

The treatment of natural boundary conditions in the finite element and finite difference methods. *Int. J. Num. Meths. in Engng.*, 5 (1973), 443–6.

CROLL, J. G. A., WALKER, A. C., *Elements of Structural Stability*. London: Macmillan, 1972. 224 pp.

DUNSTAN, T., The influence of grading on the anisotropic strength of sand. *Géotechnique*, xxii (1972), 529–32.

ELVERY, R. H., COX, A. T., BUTLER, J. E., Development of apparatus to investigate the influence of pore pressure upon the tensile behaviour of concrete. *Mag. Concrete Res.*, 24 (1972), 231–7.

ELVERY, R. H., VALE, D. W., Developments in the measurements of ultrasonic pulse velocity in concrete. *7th Int. Conf. Non-destructive Testing, Warsaw* (1973), Paper No. J17.

GREGORY, J., Rate of flocculation of latex particles by cationic polymers. *J. Colloid Interface Sci.*, 42 (1973), 448–56.

IVES, K. J., Solid–liquid separation. *Water Pollution Manual*, ed. J. Fuller. London: Thunderbird Enterprises, 1972, 55–61.

IVES, K. J., BHOLE, A. G., Theory of flocculation for a continuous flow system. *Proc. Amer. Soc. civ. Engrs., J. Environmental Engng. Div.*, 99 (1973), 17–34.

IVES, K. J., HORNER, R. M. W., Radial filtration. *Proc. Instn. civ. Engrs.*, 55 (1973), 229–49.

KEMP, K. O., Concepts of structural safety. *Civil Eng. & Pub. Wks. Rev.*, 68 (1973), 132–41.

KEMP, K. O., UPPAL, J. Y., An instability theory of failure for concrete. *Mag. Concrete Res.*, 25 (1973), 21–30.

KEMP, P. H., Optical wave recorders. *The Dock and Harbour Authority*, 53 (1972), 177–8.

A coastal engineering survey in Kent. *J. Inst. Municipal Engrs.*, 99 (1972), 289–95.

SMEED, R. J., The usefulness of formulae in traffic engineering and road safety. *Accident Analysis and Prevention*, 4 (1972), 303–12.

Progress Report 1972. *Traffic Engng. & Control*, 14 (1973), 491–6.

THOMPSON, J. M. T. Optimization as a generator of structural instability. *Int. J. Mech. Sci.*, 14 (1972), 627–9.

THOMPSON, J. M. T., LEWIS, G. M., Continuum and finite element branching studies of the circular plate. *Computers and Structures*, 2 (1972), 511–34.

THOMPSON, J. M. T., SUPPLE, W. J., Erosion of optimum designs by compound branching phenomena. *J. Mech. Phys. Solids,* 21 (1973), 135–44.

YARIMCI, E., SPENCER, H., Stability of shell-like structures by complementary energy. *Proc. Int. Conf. Variational Methods in Engineering, University of Southampton, 1972.* University of Southampton Press, 1973, 7/92–108.

ELECTRONIC AND ELECTRICAL ENGINEERING

ASH, E. A., Guided acoustic surface waves. *Proc. I.E.E.E. Ultrasonics Symp.* (1972), 429–36.

Integrated optics. *Solid State Devices. Inst. Physics Conf. ser.,* 15 (1973), 127–43.

BARLOW, H. M., High-frequency wave propagation between parallel surfaces very close together. *J. Phys.,* D, 6 (1973), 929–32.

CORR, D. G., DAVIES, J. B., Computer analysis of the fundamental and higher order modes in single and coupled microstrip. *Trans. I.E.E.E. Microwave Theory Techniques,* MTT–20 (1972), 669–78.

CULLEN, A. L., BYARS, M., Mirror corner for use with overmoded circular waveguide. *Electronics Letters,* 8 (1972), 621–3.

CULLEN, A. L., NAGENTHIRAM, P., WILLIAMS, A. D., Improvement in open-resonator permittivity measurement. *Electronics Letters,* 8 (1972), 577–9.

A variational approach to the theory of the open resonator. *Proc. roy. Soc.,* A, 329 (1972), 153–69.

DAVIES, D. E. N., RIZK, MRS M. F. S., A technique for gating short microwave pulses. *Radio and Electronic Engr.,* 43 (1973), 418–20.

DAVIES, J. B., *Electromagnetic Theory,* vol. 2. Edinburgh: Oliver and Boyd, 1972. 229 pp.

Review of methods for numerical solution of the hollow-waveguide problem. *Proc. Instn. elect. Engrs.,* 119 (1972), 33–7.

A least-squares boundary residual method for the numerical solution of scattering problems. *Trans. I.E.E.E. Microwave Theory Techniques,* MTT–21 (1973), 99–104.

(with Kretzchmar, J. G.), Analysis of hollow elliptical waveguides by polygon approximation. *Proc. Instn. elect. Engrs.,* 119 (1972), 519–22.

DAVIES, J. B., DAVIES, O. J., SAAD, S. S., Computer analysis of gradually tapered waveguide of arbitrary cross-sections. *Electronics Letters,* 9 (1973), 46–7.

DE BARROS, M. A. R. P., WILSON, M. G. F., High-speed electro-optic diffraction modulator for baseband operation. *Proc. Instn. elect. Engrs.,* 119 (1972), 807–14.

GFELLER, F. R., PITT, C. W., Co-linear acousto-optic deflection in thin-films. *Electronics Letters,* 8 (1972), 549–51.

GIBLIN, R., SCHERER, E., WIERICH, R., Computer simulation of noise and instability in high-power devices. *Trans. I.E.E.E. Electron Devices,* April (1973), 404–18.

LAGASSE, P. E., MASON, I. M., ASH, E. A., Acoustic surface waveguides—analysis and assessment. *Trans. I.E.E.E. Microwave Theory Techniques*, MTT–21 (1973), 225–36.

MASON, I. M., Anisotropy, diffraction scaling, surface wave lenses and focusing. *J. Acoust. Soc. Amer.*, 53 (1973), 1123.

MASON, I. M., MOTZ, M. D., CHAMBERS, J., Parametric interaction of acoustic surface wedge waves. *Electronics Letters*, 8 (1972), 429.

PAPADOFRANGAKIS, E., MASON, I. M., Diffraction on helical acoustic surface wave delay lines and the concept of an anisotropic edge lens. *Electronics Letters*, 9 (1973), 304.

STARTIN, R. A., KIRSTEIN, P. T., ASH, E. A., Perturbation techniques for semiconductor device computer experiments. *Proc. Instn. elect. Engrs.*, 119 (1972), 1549–54.

THOMPSON, K., WICKRAMSINGHE, H. K., ASH, E. A., Fabry-Perot Acoustic surface wave detector—application to acoustic holography. *J. Phys.*, D, *Appl. Phys.*, 6 (1973), 677–87.

VILAR, E., MATTHEWS, P. A., Amplitude dependence of frequency in oscillators. *Electronics Letters*, 8 (1972), 509.

Propagation noise and frequency stability at 36GHz. *I.E.E. Conf. Publication*, 98 (1973), 83.

WRIGHT, S., WILSON, M. G. F., New form of electro-optic deflector. *Electronics Letters*, 9 (1973), 169–70.

MECHANICAL ENGINEERING

BARCLAY, W. H., Experimental investigation of the laminar flow along a straight 135° corner. *Aeronaut. Quart.*, xxiv (1973), 147–54.

BISHOP, R. E. D., Ship survival in heavy seas. *J. Sound Vib.*, 27 (1973), 157–64 (Rayleigh Address.)

(with Booth, T. B.), *The Planar Motion Mechanism*. A.E.W. Monograph, H.M.S.O., 1973, 173 pp.

(with Mahalingam, S.), Reaction parameters for uniform beams subjected to displacement excitation. *J. Mech. Eng. Sci.*, 15 (1973), 154–6.

(with Mahalingam, S.), On modal response to a specified transient acceleration. *Ibid.*, 157–8.

BISHOP, R. E. D., BURCHER, R. K., PRICE, W. G., The uses of functional analysis in ship dynamics. *Proc. roy. Soc.*, A, 332 (1973), 23–35.

Application of functional analysis to oscillatory ship model testing. *Ibid.*, 37–49.

On the linear representation of fluid forces and moments in unsteady flow. *J. Sound Vib.*, 29 (1973), 113–28 (Fairey lecture.)

The representation of unsteady fluid forces acting on flexible structures. *Proc. Int. Symp. on Vibration Problems in Industry, Keswick, April 1973* (1973), 1–13.

BISHOP, R. E. D., PARKINSON, A. G., EATOCK TAYLOR, R., Editors, *Proceedings of the International Symposium on Directional Stability and Control of Bodies Moving in Water, London: University College, 1972*. London: Institution of Mechanical Engineers, 1973. 232 pp.

BROOME, D. R., Transients in hydraulic positioning of heavy loads.

Proc. 4th Canadian Congr. Applied Mechanics, Montreal, May 1973 (1973), 839–40.

BROOME, D. R., DAVIES, B. L., LORD, MARILYN, Research at University College on powered limbs. *D.H.S.S. BRADU Bull.*, No. 5 (1972), 60–5.

BROOME, D. R., GILHAM, W. R., A prototype spool valve for use in hydraulically powered arm prostheses. *Med. & Biol. Engng.*, 10 (1972), 796–7.

BURCHER, R. K., Further analysis of model-ship correlation data. *Proc. 13th Int. Towing Tank Conf., Berlin/Hamburg, 1972*, 2 (1973), 1037–50.
Force measurements on a segmented "Mariner" hull. *Ibid., Materials for Reports*, 107–20.

CLAYTON, B. R., *Discussion of Conference on Fan Technology and Practice*. London: Institution of Mechanical Engineers, 1972. 3 pp.

COLLINS, R., HOATH, M. T., The motion of a cavity in a vertical rotating tube. *J. Fluid Mech.*, 57 (1973), 515–27.

DAVIES, R. M., LAMBERT, T. H., The coupling of directional and roll motions of surface ships. *Proc. 4th Canadian Congr. Applied Mechanics, Montreal, May 1973* (1973), 867–8.

DOVER, W. D., Fatigue crack growth under C.O.D. cycling. *Engineering Fracture Mechanics*, 5 (1973), 11–21.

LAMBERT, T. H., COWLEY, W. E., The use of the rudder as a roll stabilizer. *Proc. 3rd Ship Control Symp.*, Paper VII C–1 (1972), 1–26.

LAMBERT, T. H., DAVIES, R. M., Hydraulic actuation for upper limb prostheses. *Proc. 25th Ann. Conf. on Engineering in Medicine and Biology* (1972), 99.

LEWINS, J., Life in a hall—a Warden's view. *Univ. of Lond. Bull.*, 8 (1973), 3–5.
(with Fadilah, S.), Optimum second order servosystem with variable viscous damping. *Queen Mary College, QMC–EP6008* (1973), 1–39.
(with Henley, E.), Editors, *Advances in Nuclear Science and Technology*, vol. 7. London: Academic Press, 1973. 379 pp.
(with Land, J., Stinson, I.), Computer science teaching and computer operation in a hall of residence. *Prof. Conf. Teaching Computing, University of London* (1973), 1–22.

MASSEY, B. S., *Solutions Manual to 'Mechanics of Fluids'*. London: Van Nostrand-Reinhold, 1973. 63 pp.

MONTGOMERY, S. R. (with Marsden, J. P.), A general survey of walking habits. *Ergonomics*, 15 (1972), 439–51.
(with Marsden, J. P.), General survey of walking habits of individuals. *Shoe Materials Progress* (1973), 11–24.

RAWSON, K. J., A model for the evolution of the Royal Navy's upkeep system. *The Organization of Large Logistic Systems*, ed. R. Bureau. London: English Universities Press, 1973, 89–104.
Towards economic warship acquisition and ownership. *The Naval Architect, J. R. Inst. Naval Architects*, 115 (1973), 43–68.

PHOTOGRAMMETRY AND SURVEYING

ALLAN, A. L., Editor, *Survey Review*. Tolworth: Directorate of Overseas Surveys of the Foreign and Commonwealth Office Overseas Development Administration.

The error ellipse: a further note. *Survey Review*, xxi (1972), 387–90.

ATKINSON, K. B., Photogrammetry at University College London. *The Airletter*, 6 (1972), 5–6.

Discussion on 'A note on the measurement of planar velocity fields by stereophotogrammetry' by R. Butterfield, R. M. Harkness and K. Z. Andrawes. *J. Hydraulic Res.*, 11 (1973), 95–6.

(with Ross-Brown, D. M.), Terrestrial photogrammetry in open pits. I. Description and use of the phototheodolite in mine surveying. *Trans. Inst. Mining and Metallurgy*, 81 (1972), 205–13.

DOWMAN, I. J., Casio FX—1 calculating machine. *Survey Review*, xxii (1973), 46–8.

The Sumlock microscientist 320G calculating machine. *Ibid.*, 112–14.

DOWMAN, I. J., ATKINSON, K. B., *Introduction to Photogrammetry*. London: The City University and University College London, 1973. 9 pp.

EDEN, J. A., Point transfer from one photograph to another. *The Photogrammetric Record*, 7 (1973), 531–7.

LAW, H., Chaining in Australia. *Survey Review*, xxii (1973), 90–2.

THOMPSON, E. H. (with Brock, G. C., Petrie, G., Grist, M. W., Francis, D. A., Dalgleish, A. G.), The Ottawa Congress, *Photogrammetric Record*, 7 (1973), 516–30.

FACULTY OF MEDICAL SCIENCES

ANATOMY AND EMBRYOLOGY

BASBAUM, A. I. (with Hand, P. J.), Projections of cervicothoracic dorsal roots to the cuneate nucleus of the rat, with observations on cellular 'bricks'. *J. comp. Neurol.*, 148 (1973), 347–59.

BELLAIRS, RUTH, BACKHOUSE, MARY (with Evans, R. J.), A correlated chemical and morphological study of egg yolk and its constituents. *Micron*, 3 (1972), 328–46.

(with Peel, E. T.), Structure and development of the secretory cells of the hen's ovary. *Z. Anat. Entw Gesch.*, 137 (1972), 170–87.

BOYDE, A., Influence of normal and abnormal enamel structure on cavity margins. *Br. dent. J.*, 133 (1972), 421–7.

Finishing techniques for the exit margin of the approximal portion of class II cavities. *Ibid.*, 134 (1973), 319–28.

(with Echlin, P.), Freeze and freeze-drying—a preparative technique for SEM. *Scanning Electron Microscopy*, Pt. III. Chicago: I.I.T. Research Institute, 1973, 759–66.

(with Höhling, H. J., Nicholson, W. A. P., Schreiber, J., Zessack, U.), The distribution of some elements in predentine and dentine of rat incisors. *Die Naturwissenshaften*, 9 (1972), S.423.

(with Knight, P. J.), Scanning electron microscope studies of class II cavity margins. *Br. dent. J.*, 133 (1972), 331–8.

BOYDE, A., JONES, SHEILA J., Scanning electron microscopic studies of the formation of mineralized tissues. *Developmental Aspects of Oral Biology*, ed. H. C. Slavkin. London: Academic Press, 1972, 243–74 (ch. II).

BOYDE, A., JONES, SHEILA J., BAILEY, E., Bibliography on biomedical applications of SEM. *Scanning Electron Microscopy*, Pt. III. Chicago: I.I.T. Research Institute, 1973, 697–734.

BOYDE, A., VESELÝ, P., The significance of SEM evaluation of the cell surface for tumor cell biology. *Scanning Electron Microscopy*, Pt. III, Chicago: I.I.T. Research Institute, 1973, 689–96.

DILLY, P. N., The larva of *Rhabdopleura compacta* (Hemichordata). *Marine Biology*, 18 (1973), 69–86.

The enigma of colouration and light emission in deep-sea animals. *Endeavour*, xxxii (1973), 25–9.

(with Messenger, J. B.), The brachial gland: a site of haemovyanin synthesis in *Octopus*. *Z. Zellforsch.*, 132 (1972), 193–201.

GABELLA, G., Fine structure of smooth muscle. *Phil. Trans.*, B, 265 (1973), 7–16.

Innervation of the intestinal muscular coat. *J. Neurocytol.*, 1 (1972), 341–62.

The arrangement of sarcoplasmic reticulum in smooth muscle. *Experientia*, 28 (1972), 948–9.

Fine structure of the myenteric plexus in the guinea-pig ileum. *J. Anat., Lond.*, 111 (1972), 69–97.

Intercellular junctions between circular and longitudinal intestinal muscle layers. *Z. Zellforsch.*, 125 (1972), 191–9.

GABELLA, G., JUORIO, A. V., Monoamines in the guinea-pig intestine. *Br. J. Pharmac.*, 47 (1973), 635–6.

GAFFAN, D., Loss of recognition memory in rats with lesions of the fornix. *Neuropsychologia*, 10 (1972), 327–41.

GRAY, E. G., *The Synapse*. Oxford University Press, 1973. 16 pp.

Are the coats of coated vesicles artifacts? *J. Neurocytol.*, 1 (1973), 363–82.

HALL-CRAGGS, E. C. B., The 'Tonico-Phasic' muscle: an experimental model. *Expl. Neurol.*, 35 (1973), 398–401.

HOBBS, M. J., Eyespot fine structure in *Eudorina illinoiensis*. *Br. phycol. J.*, 7 (1972), 347–55.

HOBBS, M. J., YOUNG, J. Z., A cephalopod cerebellum. *Brain Res.*, 55 (1972), 424–30.

JAMES, D. W., TRESMAN, R. L., The surface coats of chick dorsal root ganglion cells *in vitro*. *J. Neurocytol.*, 1 (1972), 383–95.

JONES, SHEILA J., The tooth surface in periodontal disease. *Dent. Practnr. dent. Rec.*, 22 (1972), 462–73.

Morphology of calculus formation on the human tooth surface. *Proc. Roy. Soc. Med.*, 65 (1972), 903–5.

Calculus on human teeth. *Apex*, 6 (1972), 5p.

JUORIO, A. V. (with Killick, S.), Monoamines and their metabolism in some molluscs. *Comp. gen. Pharmac.*, 3 (1972), 283–95.

(with Killick, S.), The effect of drugs on the synthesis and storage of

monoamines in nervous tissues of molluscs. *Int. J. Neuroscience,* 4 (1972), 195–202.
The distribution of catecholamines in the hypothalamus and other brain areas of some lower vertebrates. *J. Neurochemistry,* 20 (1973), 641–5.
(with Killick, S.), The distribution of monoamines and some of their acid metabolites in the posterior salivary glands and viscera of some cephalopods. *Comp. Biochem. Physiol.,* 44A (1973), 1059–67.

LIEBERMAN, A. R., A class of neurons with presynaptic perikarya and dendrites in rat dorsal lateral geniculate nucleus (LGd), *J. Anat., Lond.,* 113 (1972), 283–4.

LIEBERMAN, A. R., WEBSTER, K. E. (with Grossman, A.), A Golgi study of neurons in the dorsal lateral geniculate nucleus (LGd) of the rat. *J. Anat., Lond.,* 113 (1972), 281–3.

MERRILL, E. G., Modular instrumentation for electrophysiology. *J. Physiol.,* 226 (1972), 8–9.
Interactions between medullary respiratory neurones in cats. *Ibid.,* 72–4.

MERRILL, E. G., AINSWORTH, A., Glass-coated platinum-plated tungsten microelectrodes. *Med. & Biol. Engng.,* 10 (1972), 662–72.

MERRILL, E. G., WALL, P., Factors forming the edge of a receptive field: the presence of relatively ineffective afferent terminals. *J. Physiol.,* 226 (1972), 825–46.

MILLAR, J., Joint afferent discharge following muscle contraction in the absence of joint movement. *J. Physiol.,* 226 (1972), 72.

NIXON, MARION, *The Oxford Book of Vertebrates.* Oxford University Press, 1972. 224 pp.
Octopus. *Encyclopaedia of the Animal World.* London: J. & H. International Corporation, 1972, 1311–14.
Cuttlefish. *Ibid.,* 521–3.

NOBLE, J., Interocular transfer in the monkey: rostral corpus callosum mediates transfer of object learning set but not of single-problem learning. *Brain Res.,* 50 (1973), 147–62.

QUILLIAM, T. A., A pictorial archive of a vanishing culture. *Med. & biol. Illust.,* 22 (1972), 85–93.
Some biological aspects of vibration. *Ibid.,* 125–32.
Sensory receptors in the oral mucosa of the hedgehog. *Proc. Anat. Soc. of G.B. and Ireland,* 113 (1972), 297–8.
(with Jayaraj, P.), Intra epidermal nerve endings in the ovine palate. *Anat. Rec.,* 175 (1973), 512.

WALL, P. D. (with Nathan, P. W., Noordenbos, W.), Ongoing activity in peripheral nerve: interactions between electrical stimulation and ongoing activity. *Expl. Neurol.,* 38 (1973), 90–8.

WEBSTER, K. E., HUNT, S. P., Thalamo-hyperstriate interrelations in the pigeon. *Brain Res.,* 44 (1972), 647–51.

WEBSTER, K. E., PRICE, T. R., The cortico-thalamic projection from the primary somato-sensory cortex of the rat. *Brain Res.,* 44 (1972), 636–40.

WYLIE, C. C., Nuclear morphology and nucleolar DNA synthesis during meiotic prophase in oocytes of the chick (Gallus doemsticus). *Cell Diff.,* 1 (1972), 325–34.
The appearance and quantitation of cytoplasmic ribonucleic acid in the early chick embryo. *J. Embryol. exp. Morph.,* 28 (1972), 367–84.

(with Russell, Diane H.), The stimulation of RNA synthesis in mature amphibian oocytes by the micro-injection of putrescine. *Polyamines in Normal and Neoplastic Growth,* ed. Diane H. Russell. New York: Raven, 1973, 289–98.

YOUNG, J. Z., Some facts about the problems of mind and brain. *Search,* 3 (1972), 319–22.

The pineal gland. *Philosophy,* 48 (1973), 70–4.

Receptive fields in the visual system of the squid. *Nature, Lond.,* 241 (1973), 469–71.

Chairman's introduction to Royal Society of Medicine Symposium No. 13 on Man in His Place. Session I. Environment and Behaviour. *Proc. R. Soc. Med.,* 66 (1973), 79–80.

ZEKI, S. M., Comparison of the cortical degeneration in the visual regions of the temporal lobe of the monkey following section of the anterior commissure and the splenium. *J. comp. Neurol.,* 148 (1973), 167–76.

Colour coding in rhesus monkey prestriate cortex. *Brain Res.,* 53 (1973), 422–7.

BIOCHEMISTRY

ALLEN, M. B., BLAIR, J. McD., The regulation of rabbit liver fructose 1,6-diphosphatase activity by phospholipids *in vitro. Biochem. J.,* 130 (1972), 1167–9.

AUSTOKER, J., COX, D., MATHIAS, A. P., Fractionation of nuclei from brain by zonal centrifugation and a study of the ribonucleic acid polymerase activity in the various classes of nuclei. *Biochem. J.,* 129 (1972), 1139–55.

The synthesis of ribonucleic acid *in vivo* in the nuclei of rat brain fractionated by zonal centrifugation. *Ibid.,* 132 (1973), 813–19.

AUSTOKER, J., MATHIAS, A. P. (with Kleihues, P., Magee, P. N.), Reaction of N-nitrosourea with DNA of neuronal and glial cells *in vivo. F.E.B.S. Letters,* 32 (1973), 105–8.

BETZ, JOAN L., CLARK, PATRICIA H., Selective evolution of phenylacetamide-utilizing strains of *Pseudomonas aeruginosa. J. gen. Microbiol.,* 73 (1972), 161–74.

Growth of Pseudomonas species on phenylacetamide. *Ibid.,* 75 (1973), 167–77.

BLYTH, CAROL A., CLARKE, ROSEMARY P., FREEDMAN, R., HAMMOND, JANE, JAMES, D. W., RABIN, B. R., RIDGE, D., VINTER, JILL, WILLIAMS, D., Steroid-binding properties of a plasma-membrane fraction from rat liver. *Eur. J. Biochem.,* 32 (1973), 57–62.

BLYTH, CAROL A., COOPER, M. B., ROOBOL, ANNE, RABIN, B. R., The binding of steroid hormones to degranulated microsomes from rat-liver endoplasmic reticulum. *Eur. J. Biochem.,* 29 (1972), 293–300.

BROWN, P. R., SMYTH, M. J., CLARKE, PATRICIA H., ROSEMEYER, M. A., The subunit structure of the aliphatic amidase from *Pseudomonas aeruginosa. Eur. J. Biochem.,* 34 (1973), 177–87.

BUTTERWORTH, P. H. W. (with Chesterton, C. J., Coupar, B. E. H.), Mammalian DNA-dependent RNA polymerases: subunit structure, inter-

conversion and RNA product analysis by the vast DNA excess hybridisation technique. *Studia Biophysica,* Band 31/32 (1972), 53–63.
(with Chesterton, C. J., Coupar, B. E. H.), Large scale preparation of DNA for vast DNA excess hybridisation. *Anal. Biochem.,* 53 (1973), 28–34.

BUTTERWORTH, P. H. W., FLINT, S. J. (with Chesterton, C. J.), An approach to the study of gene expression in higher organisms. *Studia Biophysica,* Band 31/32 (1972), 65–74.

CHANCE, E. M. (with Chance, B., Erecinska, Maria). The nature of the cytochrome chain. An experimental and theoretical study. *Oxidase and Related Redox Systems. Proc. 2nd Int. Symp.,* ed. T. E. King, H. S. Mason and M. Morrison. Baltimore: University Press, 1972.
(with Chance, B., Erecinska, Maria), Optimization of electron transfer mechanism at site III in mitochondria. *Analysis and Simulation of Biochemical Systems,* ed. H. C. Henker and B. Hess. Amsterdam: North Holland, 1972, 303–15.
(with Chance, B., Erecinska, Maria, Boveris, A., Wagner, M.), Kinetic control of electron flow. *Energy Metabolism and the Regulation of Metabolic Processes in Mitochondria,* ed. M. Mehlman and R. Hanson. New York: Academic Press, 1972, 27–37.
(with Curtis, A. R.), Numerical methods for simulation and optimization. *Analysis and Simulation of Biochemical Systems,* ed. H. C. Henker and B. Hess. Amsterdam: North-Holland, 1972, 37–57.
(with Hess, B., Busse, H., Wurster, B.), Simulation of enzymes. *Ibid.,* 119–43.

CLARKE, PATRICIA H., Biochemical and immunological comparison of aliphatic amidases produced by *Pseudomonas species. J. gen. Microbiol.,* 71 (1972), 241–57.
Positive and negative control of bacterial gene expression. *Sci. Prog. Oxf.,* 60 (1972), 245–58.

CLARKE, PATRICIA H., TATA, RENEE, Isolation of amidase-negative mutants of *Pseudomonas aeruginosa* by a positive selection method using an acetamide analogue. *J. gen. Microbiol.,* 75 (1973), 231–4.

GONZALEZ-MUJICA, F., MATHIAS, A. P., Studies of nuclei separated by zonal centrifugation from liver of rats treated with thioacetamide. *Biochem. J.,* 132 (1973), 163–83.
Proteins from different classes of liver nuclei in normal and thioacetamide-treated rats. *Ibid.,* 133 (1973), 441–55.

GREENBAUM, A. L. (with Gumaa, K. A., McLean, P.), Adaptive changes in satellite systems related to lipogenesis in rat and sheep mammary gland and in adipose tissue. *Eur. J. Biochem.,* 34 (1973), 188–98.
(with Gumaa, K. A., McLean, P.), Calculation of the intracellular distribution of acetyl CoA and CoA, based on the use of citrate synthase as an equilibrium enzyme. *F.E.B.S. Letters,* 29 (1973), 193–6.

HAINES, M. E., WICKREMASINGHE, R. G., JOHNSTON, I. R., Purification and partial characterisation of rat-liver nuclear DNA polymerase. *Eur. J. Biochem.,* 31 (1972), 119–29.

HOLLAWAY, M. R., HARDMAN, M. J., Evidence for a rate-limiting conformation change in the catalytic steps of the ficin and papain-catalysed hydrolyses of benzyloxycarbonyl-L-lysine p-nitrophenyl ester. *Eur. J. Biochem.,* 32 (1973), 537–46.

HOLMES, A. M., JOHNSTON, I. R., Molecular asymmetry of rat liver cytoplasmic DNA polymerase. *F.E.B.S. Letters,* 29 (1973), 1–6.

IVATT, R. J., ROSEMEYER, M. A., The complex formed between the A and B proteins of lactose synthetase. *F.E.B.S. Letters,* 28 (1972), 195–7.

JOHNSTON, I. R., HAINES, M. E., HOLMES, A. M., The use of affinity chromatography in nucleic acid biochemistry particularly for hepatic DNA polymerase purification. *Methodological Developments in Biochemistry,* vol. 2. *Preparative Techniques,* ed. E. Reid. London: Longman, 1973, 103–8.

JOHNSTON, I. R., MATHIAS, A. P., The biochemical properties of nuclei fractionated by zonal centrifugation. *Subcellar Components: Preparation and Fractionation,* ed. G. D. Birnie. London: Butterworths, 1972, 53–75 (ch. III).

KAY, R. R., FRASER, D., JOHNSTON, I. R., A method for the rapid isolation of nuclear membranes from rat liver. Characterisation of the membrane preparation and its associated DNA polymerase. *Eur. J. Biochem.,* 30 (1972), 145–54.

KAY, R. R., JOHNSTON, I. R., The nuclear envelope; current problems of structure and of function. *Sub-cellular Biochemistry,* 2 (1973), 127–66.

MANCHESTER, K. L., Aspects of the activity of insulin. *Diabetes.* Sofia: Publishing House of the Bulgarian Academy of Sciences, 1972, 183–90.
Stimulation of pyruvate dehydrogenase activity of muscle by caffeine, local anaesthetics and β-blockers. *J. Int. Res. Comms.,* 1 (1973), 9.

MANCHESTER, K. L., ROETSCHER, V. M. (with Bullock, G.), Influence of methylxanthines and local anaesthetics on the metabolism of muscle and associated changes in mitochondrial morphology. *Chemico-Biological Interactions,* 6 (1973), 273–96.

MATHIAS, A. P., WYNTER, C. V. A., The uses of metrizamide in the fractionation of nuclei from brain and liver tissue by zonal centrifugation. *F.E.B.S. Letters,* 33 (1973), 18–22.

MEADOW, PAULINE M., Surface layers of Pseudomonads. *J. gen. Microbiol.,* 73 (1972), ii.

MOWBRAY, J. (with Macnab, R., Moses, V.), Evidence for metabolic compartmentation in *Escherichia coli. Eur. J. Biochem.,* 34 (1973), 15–19.
(with Ottaway, J. H.), The flux of pyruvate in perfused rat heart. *Eur. J. Biochem.,* 36 (1973), 362–8.
(with Ottaway, J. H.), The effect of insulin and growth hormone on the flux of tracer from labelled lactate in perfused rat heart. *Ibid.,* 369–79.
(with Ottaway, J. H.), The computation of parameters in isotopic tracer systems not in a steady-state. *Ibid.,* 380–4.

RABIN, B. R., BLYTH, CAROL A., COOPER, M. B., ROOBOL, ANNE, WILLIAMS, D. J., The effects of carcinogens and steroid hormones on the structural apparatus involved in protein synthesis and export. *The Molecular Basis of Biological Transport, Miami Winter Symposia,* vol. 3. New York and London: Academic Press, 1972, 113–31.

ROODYN, D. B., Some methods for isolating nuclei. *Subcellar Components: Preparation and Fractionation,* ed. G. D. Birnie. London: Butterworth, 1972, 15–51.

TURNER, L. V., MANCHESTER, K. L., Effects of denervation hypertrophy in rat diaphragm muscle on the activity of ribosomes and sap fractions in protein synthesis. *Biochim. biophys. Acta.,* 299 (1973), 612–20.

WILLIAMS, D. J., CLARK, R. P., RABIN, B. R., The effects of Aflatoxin B_1 *in vivo* on membrane-ribosome association. *Br. J. Cancer*, 27 (1973), 283–90.

WILLIAMS, D. J., RABIN, B. R. (with Kisilevsky, R.), Endoplasmic membrane degranulation *in vivo* as a result of ethionine intoxication. *F.E.B.S. Letters*, 26 (1972), 245–8.

WIMHURST, J. M., MANCHESTER, K. L., Effects of bivalent ions on the key enzymes of glycolysis. *F.E.B.S. Letters*, 27 (1972), 321–6.

Effects of manganese on the activity of glycolytic and gluconeogenic enzymes in the perfused rat liver. *Ibid.*, 29 (1973), 201–3.

Induction and suppression of the key enzymes of glycolysis and gluconeogenesis in the isolated perfused rat liver in response to glucose, fructose and lactate. *Biochem. J.*, 134 (1973), 143–56.

BIOPHYSICS

BAUMANN, F., Influence of light adaptation and intracellular injection of sodium on the receptor potential of drone retinula cells. *J. Physiol.*, 226 (1972), 114P.

BETZ, W., SAKMANN, B., Effects of proteolytic enzymes on function and structure of frog neuromuscular junctions. *J. Physiol.*, 230 (1973), 673–88.

BEVAN, S., GRAMPP, W., MILEDI, R., Induced transmitter release from Schwann cells and its suppression by actinomycin D. *Nature, New Biol.*, 241 (1973), 85–6.

The suppression of transmitter release from Schwann cells by actinomycin D. *Acta physiol. scand.*, 87 (1973), 46–7A.

Further observations on Schwann-cell m.e.p.p.s. *J. Physiol.*, 232 (1973), 88-9P.

DENNIS, M., Electrically evoked release of acetylcholine from Schwann cells at denervated motor end-plates. *J. Physiol.*, 226 (1972), 79–81P.

FALK, G., FATT P., An analysis of light induced admittance changes in rod outer segments. *J. Physiol.*, 229 (1973), 185–220.

Isolation of components of admittance change in rod outer segments. *Ibid.*, 221–39.

GLOVER, V. A. S., GREEN, D. P. L., A simple quick microassay for choline acetyltransferase. *J. Neurochem.*, 19 (1972), 2465–6.

HARRIS, E. J., A physico-chemical basis for anion, cation and proton distribution between rat-liver mitochondria and the suspending medium. *J. Bioenergetics*, 4 (1973), 179–85.

HARRIS, E. J., BANGHAM, J. A., Titration of mitochondrial buffer by accumulated anions. *J. Membrane Biol.*, 9 (1972), 141–54.

HARRIS, E. J., BANGHAM, J. A., ZUKOVIC, B., Equilibration of chloride and pyruvate distributions between liver mitochondria and medium mediated by organo-tin salts. *F.E.B.S. Letters*, 29 (1973), 339–44.

HOLMAN, M. E., SPITZER, N. C., Action of botulinum toxin on transmission from sympathetic nerves to the vas deferens. *Br. J. Pharmacol.*, 47 (1973), 431–3.

KATZ, B., All-or-none responses and smaller things inside them. *Glaxo Volume*, 38 (1973), 27–40.

KATZ, B., MILEDI, R., The statistical nature of the acetylcholine potential and its molecular components. *J. Physiol.*, 224 (1972), 665–99.
The characteristics of 'end-plate noise' produced by different depolarizing drugs. *Ibid.*, 230 (1973), 707–17.
The binding of acetylcholine to receptors and its removal from the synaptic cleft. *Ibid.*, 231 (1973), 549–74.
MILEDI, R., Synaptic potentials in nerve cells of the stellate ganglion of the squid. *J. Physiol.*, 225 (1972), 501–14.
Transmitter release induced by injection of calcium ions into nerve terminals. *Proc. roy. Soc.*, B, 183 (1973), 421–5.
POTTER, L. T., Synthesis, storage and release of acetylcholine from nerve terminals. *Structure and Function of Nervous Tissue*, vol. IV, ed. G. H. Bourne. New York: Academic Press, 1972, 105–28.
POTTER, L. T., FRANKLING, G. I., Studies of the binding of α-bungarotoxin to membrane-bound and detergent-dispersed ACh receptors from *Torpedo* electric tissue. *F.E.B.S. Letters*, 28 (1972), 101–6.
TURKANIS, S. A., Effects of muscle stretch on transmitter release at end-plates of rat diaphragm and frog sartorius muscle. *J. Physiol.*, 230 (1973), 391–403.
ZUCKER, R. S., Changes in the statistics of transmitter release during facilitation. *J. Physiol.*, 229 (1973), 787–810.

PHARMACOLOGY

ASSEM, E. S. K., The passive sensitisation of human lung as a test for drug allergy. *Mechanisms of Drug Allergy*, ed. C. H. Dash and H. E. H. Jones. London: Churchill-Livingstone, 1972, 112–20.
IgE and other *in vitro* tests in the diagnosis and follow-up of drug allergy, *Ibid.*, 179–88.
Inhibition des reactions allergiques par les stimulants beta-adrenergiques. *Symp. Salbutamol, Glaxo, London* (1972), 61–8.
(with Banks, R.), Practolol-induced drug eruption. *Proc. roy. Soc. Med.*, 66(1973), 179–80.
(with Littlejohns, D. W., Kennedy, C. T. C.), Immunological evidence of two forms of allergy to pyrazolone drugs. *Rheumatology and Rehabilitation*, xii (1973), 57–61.
(with McAllen, M. K.), Changes in challenge tests following hyposensitization with mite extract. *Clinical Allergy*, 3 (1973), 161–75.
ASSEM, E. S. K., ATKINSON, G., Histamine release by MCDP (401), a peptide from the venom of the honey bee (Apis mellifica). *Br. J. Pharmac.*, 48 (1973), 337–8P.
ASSEM, E. S. K., FEIGENBAUM, J. J., Effect of adrenergic drugs on histamine forming capacity of human leucocytes. *Br. J. Pharmac.*, 46 (1972), 519–20P.
ASSEM, E. S. K., VICKERS, M. R., Serum IgE and other *in vitro* tests in drug allergy. *Clinical Allergy*, 2 (1972), 325–34.
DALE, M. M., DESAI, H., ANDJARGHOLI, M. (with Easty, G. C., Tchao, R.), The induction of tumours in the guinea-pig with methylcholanthrene and diethylnitrosamine and their propagation *in vivo* and *in vitro*. *Br. J. Cancer*, 27 (1973), 445–50.

DALE, M. M., HAYLETT, D. G. (with Green, R. D.), Effect of adrenergic amines on the membrane potential of guinea-pig liver parenchymal cells in short term tissue culture. *Experientia*, 28 (1972), 1072–4.

FOREMAN, J. C., The mechanism of spontaneous histamine release from mast cells. *J. Physiol.*, 229 (1972), 8–9P.

FOREMAN, J. C., MONGAR, J. L., The role of the alkaline earth ions in the anaphylactic histamine secretion. *J. Physiol.*, 224 (1972), 753–69.

Effect of calcium on dextran-induced histamine release from isolated mast cells. *Br. J. Pharmac.*, 46 (1972), 767–9.

Dual effect of lanthanum on histamine release from mast cells. *Nature, New Biology*, 240 (1972), 255–6.

The interaction of calcium and strontium with phosphatidyl serine in the anaphylactic secretion of histamine. *J. Physiol.*, 230 (1973), 493–507.

HAYLETT, D. G., JENKINSON, D. H., Effects of noradrenaline on potassium efflux, membrane potential and electrolyte levels in tissue slices prepared from guinea-pig liver. *J. Physiol.*, 225 (1972), 721–50.

The receptors concerned in the actions of catecholamines on glucose release, membrane potential and ion movements in guinea-pig liver. *Ibid.*, 751–72.

JENKINSON, D. H., Classification and properties of peripheral adrenergic receptors. *Brit. Med. Bull.*, 29 (1973), 142–7.

(with Terrar, D. A.), Influence of chloride ions on changes in membrane potential during prolonged application of carbachol to frog skeletal muscle. *Br. J. Pharmac.*, 47 (1973), 363–75.

JONES, I. M., JORDAN, C. C., WEBSTER, R. A. (with Morton, I. K. M., Stagg, C. J.), Chronic dorsal root section on free amino acid levels in the rabbit spinal cord. *Br. J. Pharmac.*, 47 (1973), 668–9P.

JUORIO, A. V., The distribution of catecholamines in the hypothalamus and other brain areas of some lower vertebrates. *J. Neurochem.*, 20 (1973), 641–5.

with Gabella, G.), Monoamines in the guinea-pig intestine. *Br. J. Pharmac.*, 47 (1973), 635–6P.

(with Killick, S. W.), Monoamines and their metabolism in some molluscs, *Comp. Gen. Pharmacol.*, 3 (1972), 283–95.

(with Killick, S. W.), The effect of drugs on the synthesis and storage of monoamines in nervous tissue of molluscs. *Int. J. Neurosc.*, 4 (1972), 195–202.

(with Killick, S. W.), The distribution of monoamines and some of their acid metabolites in the posterior salivary glands and viscera of some cephalopods. *Comp. Biochem. Physiol.*, 44A (1973), 1059–67.

KUMAR, R. (with Mitchell, E., Stolerman, I. P.), Disturbed patterns of behaviour in morphine tolerant and abstinent rats. *Br. J. Pharmac.*, 42 (1971), 473–84.

(with Stolerman, I. P.), Morphine dependent behaviour in rats: some clinical implications. *Psychological Medicine*, 3 (1973), 225–37.

KUMAR, R., STEINBERG, HANNAH (with Stolerman, I. P.), Resumption of morphine self-administration by ex-addict rats. *Agonist and Antagonist Actions of Narcotic Analgesic Drugs*, ed. H. W. Kosterlitz, H. O. J. Collier and J. E. Villarreal. London: Macmillan, 1973, 255–65.

LAURENCE, D. R., *Clinical Pharmacology* (4th ed.). London: Churchill–Livingstone, 1973. 710 pp.

(with Boakes, A. J., Lovel, K. W., O'Neil, R., Verrill, P. J.), Adverse reactions to local anaesthetic vasoconstrictor preparations. *Brit. Dental J.*, 133 (1972), 137.

(with Boakes, A. J., Teah, P. C., Haror, R. S. K., Benedikter, L. T., Pritchard, B. N. C.), Interactions between sympathomimetic amines and antidepressant agents in man. *Brit. med. J.*, 1 (1973), 311.

SCHILD, H. O., The antianaphylactic action of sympathomimetic amines. *Excerpta Medica Int. Congr.*, 232, *Proc., VII Int. Congr. of Allergology, Florence* (1970), 357–9.

Metals and the vasopressin receptor. *Neurohypophysical Hormones, Ciba Foundation Study Group 39,* ed. G. E. W. Wolstenholme and J. Birch. 1971, 119–25.

(with Davies, H. ff. S., Hartley, R. E.), Mode of action of permeability factor obtained from spleen. *Br. J. Pharmac.*, 46 (1972), 564P.

(with Davies, H. ff. S., Hartley, R. E.), Chemical modifications of spleen permeability factor. *Ibid.*, 565P.

(with Davies, H. ff. S.), Modification of primary amino groups and carboxylate groups of SPF. *Arthritis & Rheumatism Council Report* (1972), 74–5.

STEINBERG, HANNAH, Long-term after-effects of psycho-active drugs on animal behaviour. *Collegium Internationale Neuro-psychopharmacologicum VIII C.I.N.P. Congress Abstracts. Psychopharmacologia,* 26 suppl. (1972), 97.

Animal models for behavioural and biochemical studies on the effect of lighium salts. *Biochemical Society Trans.*, 1 (1972), 93–6.

(with Katz, D. M.), Role of social factors in response to morphine. *Drug Addiction: Clinical and socia-legal aspects,* II, *ed.* J. M. Singh, L. H. Miller, and H. Lal. Mount Kisco: Futura, 1972, 85–95.

STEINBERG, HANNAH, TOMKIEWICZ, M. (with Rushton, R.), Effects of chlordiazepoxide alone and in combination with amphetamine on animal and human behaviour. *Benzodiazepines,* ed. S. Garattini, E. Missine, L. D. Randall. New York: Raven Press, 1973, 355–66.

(with Baxter, M. J., Miller, A. A.), Some studies on the convulsant action of folic acid. *Br. J. Pharmac.*, 48 (1973), 350–1.

WEBSTER, R. A. (with Gardner, C. R.), The effect of some anticonvulsant drugs on leptazol and bicuculline induced acetylcholine efflux from rat cerebral cortex. *Br. J. Pharmac.*, 47 (1973), 652P.

PHYSIOLOGY

BANKS, BARBARA E. C., A misapplication of chemistry in biology. *School Science Rev.* (1972), 286–97.

(with Callomon, J. H., Vernon, C. A.), McClare's Quantum mechanical muscle model. *Nature, Lond.*, 242 (1973), 473–4.

(with Charlwood, Katharine A., Lamont, D. Margaret), Apparent orientating effects produced by nerve growth factor. *Nerve Growth Factor and its Antiserum,* ed. Eleanor Zaimis. London: Athlone Press, 1972, 102–7.

(with Damjanovic, V., Vernon, C. A.), The so-called thermodynamic compensation law and thermal death. *Nature, Lond.*, 240 (1972), 147–8.

(with Pearce, F. L., Banthorpe, D. V., Berry, A. R., Davies, H. ff. S.,

Vernon, C. A.), The isolation and characterization of nerve-growth factor from the venom of *Vipera russelli*. *Eur. J. Biochem.*, 29 (1972), 417–25.

BANKS, BARBARA E. C., WALTER, S. J., Epithelial growth factor—an artifact? *J. Physiol.*, 225 (1972), 37–8P.

BLINKS, J. R., JEWELL, B. R., The meaning and measurement of myocardial contractility. *Cardiovascular Fluid Dynamics*, vol. I, ed. D. H. Bergel. London: Academic Press, 1972, 225–60.

(with Olson, Carmille B., Braveny, P.), Influence of caffeine and other methylxanthines on mechanical properties of isolated mammalian heart muscle. *Circulation Res.*, 30 (1972), 367–92.

BRADBURY, M. W. B., REYNOLDS, J. M., REYNOLDS, MARGARET, SAUNDERS, N. R. (with Crowder, Janet, Desai, Saroj), Electrolytes and water in the brain and cerebrospinal fluid of the foetal sheep and guinea-pig. *J. Physiol.*, 227 (1972), 591–610.

COOKE, E. C., LIPPOLD, O. C. J., Axial movement of the eye, in response to a flash of light, related to the occipital evoked response. *J. Physiol.*, 232 (1973), 15–16P.

COOKE, E. C., TRESS, KATHLEEN H., A method for recording cerebral recovery cycles in the conscious unrestrained rat. *J. Physiol.*, 232 (1973), 17P.

DARKE, A. C., SMAJE, L. H., Dependence of functional vasodilatation in the cat submaxillary gland upon stimulation frequency. *J. Physiol.*, 226 (1972), 191–203.

The effect of chronic duct ligation on the vascular and secretory response of the cat's submaxillary gland. *Ibid.*, 228 (1973), 361–76.

DAVSON, H., Dynamic aspects of cerebrospinal fluid. *Hydrocephalus and Spina Bifida Suppl.*, 27 (1972), 1–16.

DAVSON, H., DOMER, F. R., HOLLINGSWORTH, JILLIAN, R., The mechanism of drainage of the cerebrospinal fluid. *Brain*, 96 (1973), 329–36.

DAVSON, H., HOLLINGSWORTH, JILLIAN, R., The effects of iodate on the blood-vitreous barrier. *Exp. Eye Res.*, 14 (1972), 21–8.

DIAMOND, J., ROPER, S., Analysis of mauthner cell responses to iontopheretically delivered pulses of gaba, glycine and L-glutamate. *J. Physiol.*, 232 (1973), 113–28.

DIAMOND, J., ROPER, S., YASARGIL, G. M., The membrane effects, and sensitivity to strychnine, of neural inhibition of the mauthner cell, and its inhibition by glycine and gaba. *J. Physiol.*, 232 (1973), 87–111.

ELLAWAY, P. H., PASCOE, J. E., TROTT, JUDY R., On the descending 5-hydroxytryptaminergic pathway controlling the stretch reflex. *J. Physiol.*, 230 (1972), 17–18P.

GARDNER-MEDWIN, A. (with Bliss, T. V. P.), Long-lasting potentiation of synaptic transmission in the dentate area of the unanaesthetized rabbit following stimulation of the perforant path. *J. Physiol.*, 232 (1973), 357–74.

GILBERT, CLAUDE, KRETZSCHMAR, K. M., WILKIE, D. R., Heat, work, and phosphocreatine splitting during muscular contraction. *Cold Spr. Harb. Symp. Quantitative Biology*, xxxvii (1972), 613–18.

HARKNESS, M. L. R., HARKNESS, R. D., Changes with age in some mechanical properties of the skin in the rat. *Connective Tissue and*

Ageing, ed. H. G. Vogel. Amsterdam: Excerpta Medica, 1973, 219–21.
Variation in connective tissue components of arteries along their length. *Ibid.*, 11.
The use of mechanical tests in determining the structure of connective tissue. *Biorheology*, 10 (1973), 157–63.

HARKNESS, R. D., Biophysical properties. *The Comparative Molecular Biology of Extra Cellular Matrices*, ed. H. C. Slavkin. New York: Academic Press, 1972, 412–20.
Editorial—preclinical training. *Apex, J. Dental Soc., U.C.H.M.S.*, 7 (1973), 5–7.

HUXLEY, A. F., Research on nerve and muscle. *K. S. Cole Festschrift Volume*, ed. Gordon and Breach. Chicago University Press, 1972, 311–17.
A note suggesting that the cross-bridge attachment during muscle contraction may take place in two stages. *Proc. roy. Soc.*, B, 183 (1973), 83–6.

HUXLEY, A. F., SIMMONS, R. M., Tension transients after quick release in rat and frog skeletal muscles. *Nature, Lond.*, 237 (1972), 281–3.
Reply to R. H. Abbott. *Nature, New Biol.*, 239 (1972), 186–7.
Mechanical transients and the origin of muscular force. *Cold Spr. Harb. Symp. Quantitative Biology*, xxxvii (1972), 669–80.

SAUNDERS, N. R., Development of the blood-brain barrier in the fetus. *3rd European Congr. Perinatal Medicine*, ed. H. Bossart, J. M. Cruz, A. Huber, L. S. Prod'hom, and J. Sistek. Lausanne: Hans Huber, 1973, 54–62.
(with Dziegielewska, K., Häggendal, C. J., Dahlström, A. B.), Slow accumulation of choline acetyltransferase in crushed sciatic nerves of the rat. *J. Neurobiol.*, 4 (1973), 95–103.

SAUNDERS, N. R., BRADBURY, M. W. B., The development of the internal environment of the brain. *Fetal Pharmacology*, ed. L. O. Boreus. New York: Raven, 1973, 93–109.

SAUNDERS, N. R., REYNOLDS, J. M., REYNOLDS, MARGARET, Development of the blood-brain barrier mechanisms in the foetus. *Sir Joseph Barcroft Centenary Symp. on Foetal and Neonatal Physiology*, ed. R. Comline, K. Cross, and P. Nathanielsz. Cambridge University Press, 1973, 33–9.

SMAJE, L. H., Spontaneous salivation in the rabbit submandibular gland. *J. Physiol.*, 231 (1973), 179–93.

SMITH, I. C. H., WOLEDGE, R. C., A heat flow calorimeter for muscle heat measurement. *J. Physiol.*, 226 (1972), 9–11P.

STIRLING, R. VICTORIA, The effect of increasing the innervation field sizes of nerves on their reflex response time in salamanders. *J. Physiol.*, 229 (1973), 657–79.

WAITE, PHIL. M. E., Somatotopic organization of vibrissal responses in the ventro-basal complex of the rat thalamus. *J. Physiol.*, 228 (1973), 527–40.
The responses of cells in the rat thalamus to mechanical movements of the whiskers. *Ibid.*, 541–61.

WILKIE, D. R., Second law of thermodynamics. *Nature, Lond.*, 242 (1973), 606–7.
Energetics of muscular contraction. *J. Physiol.*, 231 (1973), 55–6P.

WOLEDGE, R. C., *In vitro* calorimetric studies relating to the interpretation of muscle heat experiments. *Cold Spr. Harb. Symp. on Quantitative Biology*, xxxvii (1972), 629–34.
(with Mulvany, M. J.), Heat production in guinea-pig taenia coli muscles. *J. Physiol.*, 229 (1972), 20–1P.

FACULTY OF ENVIRONMENTAL STUDIES

SCHOOL OF ENVIRONMENTAL STUDIES

ABERCROMBIE, M. L. J., Teaching in small groups. *Higher Education in the Seventies*, ed. H. J. Butcher and E. Rudd. London: McGraw Hill, 1972, 119–230.
Integrated building design: the human factor. *Architects J.* (13 Sept. 1972), 581–2.

ABERCROMBIE, M. L. J., HUNT, S. M., STRINGER, P. F. Follow-up of the selection procedure used in the Bartlett School 1964–1966. *ART*, 2 (1972), 76–87.

ANDREWS, J., HATCHETT, M., HILLEBRANDT, PATRICIA M., JAFFAR, J. A., KAPLINSKY, S., TURIN, D. A., *Construction and Development: a framework for research and action* (a discussion paper commissioned by the IBRD). London: UCERG, 1972. 65 pp.

BEER. MARCIA, DIONISOTTI, EUGENIA, KAFANDARIS, S., SUGDEN, J. D., HARRIS, R. F., TALBOT, P. J., TURIN, D. A., *Mechanism of Response to Effective Demand* (a progress report on a research project sponsored by the SRC). London: UCERG, 1972. 45 pp.

CLAMP, P. E., Approaches to the visual environment. *Arch. Teaching & Res.*, 2 (1973), 153–60.

COWAN, P. D., Editor, *The Future of Planning*. London: Heinemann Educational Books, 1973. 182 pp.

FISHER, R. J., Walls. London and Basingstoke: Macmillan, 1972. 120 pp.

ISSACHAROFF, RUTH, The limitations of London Housing Associations. *Race Today*, 4 (1972), 294–6.
Another chance for cities. *Ibid.*, 5 (1973), 39.
(with Harloe, M., Minns, R.), The organizational context of housing policy in Inner London: the Lambeth experience. *London: Urban Patterns, Problems, and Policies*, ed. D. V. Donnison and D. Eversley. London: Heinemann Educational Books, 1973, 314–54.

KIRBY, H. R., Land-use transport planning—a review article. *Tn Plann. Rev.*, 43 (1972), 323–6.
(with Evans, Suzanne P.), A three-dimensional Furness procedure for calibrating gravity models. *Proc. PTRC Summer Annual Mtg, Brighton, June 1973*. London: Planning and Transport Research and Computation, 1973. 60 pp.

LLEWELYN-DAVIES, LORD, The American city through English eyes. *Daedalus*, 101 (1972), 185–93.

MAXWELL, R. M., *New British Architecture*. Stuttgart: Verlag Hatje, 1972; New York, Praeger, 1972; London: Thames and Hudson, 1973.
Architektur. *Deutsche Bauzeitung*, E1569E (1972), 1069–76.

Stirling's Florey building (A rakish dormitory confronts Oxford). *Architecture Plus,* 1 (1973), 24–32, 94.
Sartago's medical centre, Rome (Definition by contrast). *Architectural Rev.,* 154 (1973), 34–41.

ROWLANDS, E., Noise from urban roads—control and prediction. *J. R. Tn Plann. Inst., Lond.,* 59 (1973), 10–13.

ROWLANDS, E., LOE, O. L., WATERS, ISOBEL M., HOPKINSON, R. G., Visual performance in illuminance of different spectral quality. *Commission internationale de l'eclairage publication CIE No. 21A and B* (Compte rendu, dix septieme session, Barcelona, Septembre 1971) (1972), Paper P.71.36.

SIMMIE, J. M., Community requirements and optimum transportation. *Urban and Regional Ground Transportation Surveys and Readings,* ed. J. J. Murray. Shannon: Irish University Press, 1973, 421–8.

STRINGER, P. F., Student personality. *Contemporary Problems in Higher Education,* ed. H. J. Butcher and E. Rudd. London: McGraw Hill, 1972, 159–69.
Some remarks on people's evaluation of environments. *Patterns and Processes in Urban and Regional Systems,* ed. A. G. Wilson. London: Pion, 1972, 316–24.
A rationale for participation. *Design Participation,* ed. N. Cross. London: Academy Editions, 1972, 25–9.
Psychological significance in personal and supplied construct systems: a defining experiment. *Eur. J. Soc. Psychol.,* 2 (1972), 437–47.

STRINGER, P. F., TAYLOR, MAUREEN, Plans as seen by the public. *Built Environment,* 1 (1972), 405–8.
Case study. II. South London. *J. R. Tn Plann. Inst., Lond.,* 59 (1973), 171–4.

TURIN, D. A., *The Variety of Components and Elements in Industrialised Building: two case studies.* London: UCERG, 1973, 51 pp.

TURIN, D. A., DREWER, S. P., The construction industry in France. *Building,* ccxxiv (1973), 125–30.

COMPUTER CENTRE

DAY, A. C., *Fortran Techniques with Special Reference to Non-Numerical Applications.* Cambridge University Press, 1972. 96 pp.
A London Fortran Course (Students' handbook for the television course). London: Athlone Press, 1972. 85 pp.

ILLINGWORTH, J. J., Line printer graphics at U.C.L. *Proc. S.E.A.S. 72 Conf., Gothenburg 1972.* Nijmegen: Share European Association, 1973, 505–10.

SAMET, P. A., Software efficiency. *Software Engineering State of the Art Report 11,* ed. C. Boon. Maidenhead: Infotech, 1972, 517–29.

SHAW, A., FAMULUS a documentation system. *Proc. S.E.A.S. 72 Conf., Gothenburg 1972.* Nijmegen: Share European Association, 1973, 533–40.

WYLD, C. (with Mould, R. F.), A comparison between line printer and conventional polaroid gamma camera displays using a liver phantom, off-line computer and contour mapping package. *Phys. Med. Biol.,* 18 (1973), 88–99.

THE LIBRARY

HOGARTH, JENNIFER (with Salt, John), *Postwar Labour Migration in Western Europe: a preliminary working bibliography*. London: Manpower Society, 1973. iii+37 pp.

SOAR, GEOFFREY, Additions to the native literary pantheon. A review of *The New Cambridge Bibliography of English Literature*, vol. IV, 1900–1950 (1972). *Times Higher Ed. Suppl.*, No. 78 (1973), v. (Books for the Library).

TOWNSEND, JOHN, Bibliography of British Labour History 1972. *Bull. Soc. for the Study of Labour History*, No. 26 (1973), 80–7.

HEALTH CENTRE

HUBBACK, J. Uses and abuses of analogy. *J. Analytical Psychol.*, 18 (1973), 85–95.

APPENDIX I

COLLEGE COMMITTEE

Chairman: Sir Bernard Waley-Cohen, BT, LL.D., M.A.‡
Vice-Chairman: Sir Edward Playfair, K.C.B.‡
Treasurer: Sir John Stevens, K.C.M.G., O.B.E., D.S.O., T.D.†*
The Right Hon. Lord Annan, O.B.E., M.A., D.LITT., D.U., *Provost*‡
Sir Desmond Bonham-Carter, T.D.
Mrs Irene Chaplin, B.A., J.P.
Sir Edwin Chapman-Andrews, K.C.M.G., O.B.E., B.A.†
Professor P. E. Corbett, M.A.
Professor A. L. Cullen, O.B.E., D.SC.(ENG.), C.ENG., F.C.G.I., F.I.E.E., F.I.E.E.E., F.INST.P.
Professor A. G. Davies, D.SC., F.R.I.C.¶
E. Falk
Professor L. Fowden, PH.D., F.R.S.†§
Professor E. G. Gray, B.SC., PH.D.
W. Greaves, B.SC.(ENG.)
G. Hall, PH.D.
P. W. Heath, B.SC.(ECON.)
The Hon. Virginia Makins, B.A.
Sir Angus Paton, C.M.G., B.SC., C.ENG., F.I.C.E., F.A.S.C.E., F.R.S.†
S. W. C. Phillips, C.B., B.A.†
G. Radice, B.A.
The Hon. Jacob Rothschild
F. E. P. Sandilands, C.B.E., M.A.
Professor E. H. Scamell, LL.M.
B. C. G. Whitaker, B.A.
H. B. Wright, M.B., F.R.C.S.

ASSESSORS

N. B. Harte, B.SC.(ECON.)
P. A. Johns§
D. Meneer
C. Ray¶
A. F. D. Scott, B.SC.
Professor N. F. Watson, B.ARCH., R.I.B.A.
The Dean of Students
The Senior Tutor

†Fellow of the College. ‡Hon. Fellow of the College. §Membership terminated before 30 September 1973. ¶Appointed after 1 October 1972. *Died 27 October 1973.

APPENDIX II

PROFESSORIAL BOARD

Chairman: The Right Hon. Lord Annan, O.B.E., M.A., D.LITT., D.U., *Provost*‡
J. T. Aitken, M.D., Professor of Anatomy
W. K. Allan, B.SC., M.S., PH.D., C.ENG., M.I.MECH.E., M.R.I.N.A., Senior Lecturer in Mechanical Engineering* (to 31 January 1973)
J. E. Anderson, PH.D., Lecturer in Chemistry*
E. A. Ash, PH.D., D.I.C., A.C.G.I., C.ENG., M.I.E.E., F.I.E.E.E., Professor of Electrical Engineering
K. B. Atkinson, B.SC., Lecturer in Photogrammetry and Surveying*
R. J. Audley, PH.D., Professor of Psychology
P. R. Banham, PH.D., Professor of History of Architecture
T. Barnard, PH.D., D.I.C., Professor of Micropalaeontology
N. A. Barnicot, PH.D., Professor of Physical Anthropology†
Lisbeth-Anne H. Bawden, M.A., Lecturer in Fine Arts*
W. Beckerman, M.A., PH.D., Professor of Political Economy
P. R. Bell, M.A., Professor of Botany
H. Billett, B.SC.(ENG.), HON.R.C.N.C., C.ENG., M.I.MECH.E., A.F.R.AE.S., Professor of Mechanical Engineering
R. E. D. Bishop, PH.D., D.SC.(ENG.), SC.D., HON.R.C.N.C., C.ENG., F.I.MECH.E., A.F.R.AE.S., Kennedy Professor of Mechanical Engineering†
Marian E. A. Bowley, B.SC (ECON.), PH.D., Professor of Political Economy
R. L. F. Boyd, C.B.E., B.SC.(ENG.), PH.D., C.ENG., F.I.E.E., F.R.S., Professor of Physics
Arthur Brown, M.A., D.LIT., Professor of Library Studies†
E. H. Brown, M.SC., PH.D., Professor of Geography
E. H. S. Burhop, B.A., M.SC., PH.D., F.R.S., Professor of Physics
J. H. Burns, M.A., PH.D., Professor of the History of Political Thought
G. P. G. Butler, M.A., PH.D., Senior Lecturer in German*
W. E. Butler, M.A., J.D., PH.D., Reader in Comparative Law*
F. J. J. Cadwallader, PH.D., Lecturer in Laws*
L. Castillejo, M.A., B.SC.(ENG.), Professor of Physics
T. J. Chandler, M.SC., PH.D., Professor of Geography
B. Cheng, LL.D., LIC.-EN-DR., Professor of Air and Space Law
I. R. Christie, M.A., Professor of Modern British History
Patricia H. Clarke, B.A., D.SC., Reader in Microbial Biochemistry*
Sir William Coldstream, C.B.E., D.LITT., Slade Professor of Fine Art†
R. Collins, B.SC., PH.D., Lecturer in Mechanical Engineering*
P. E. Corbett, M.A., Yates Professor of Classical Art and Archaeology
P. D. Cowan, DIPL.ARCH., PH.D., R.I.B.A., Professor of Planning Studies
A. L. Cullen, O.B.E., D.SC.(ENG.), C.ENG., F.C.G.I., F.I.E.E., F.I.E.E.E., F.INST.P., Pender Professor of Electrical Engineering

*Elected for membership during Session 1972-73 (College Statute 24(4), Regulation 29); †Fellow of the College. ‡Hon. Fellow of the College.

J. S. Cummins, PH.D., Professor of Spanish
S. P. Datta, B.SC., M.B., B.S., Professor of Medical Biochemistry†
A. G. Davies, D.SC., F.R.I.C., Professor of Chemistry
D. E. N. Davies, D.SC., C.ENG., F.I.E.E., M.I.E.R.E., Professor of Electrical Engineering
O. J. Davies, M.SC., PH.D., Lecturer in Electronic and Electrical Engineering*
D. G. Davis, PH.D., Senior Lecturer in Physics and Astronomy*
G. D. Dawson, M.SC., M.B., CH.B., Professor of Physiology
D. T. Donovan, D.SC., Yates-Goldsmid Professor of Geology
M. Mary Douglas, M.A., D.PHIL., Professor of Social Anthropology
G. C. Drew, M.A., Professor of Psychology
M. J. Evans, B.A., PH.D., Lecturer in Anatomy and Embryology*
S. A. Fender, M.A., PH.D., Lecturer in English Language and Literature*
P. G. Foote, M.A., FIL.DR., Professor of Old Scandinavian
L. Fowden, PH.D., F.R.S., Professor of Plant Chemistry† (to 31 March 1973)
J. W. Fox, PH.D., F.INST.P., Senior Lecturer in Physics and Astronomy*
R. B. Freeman, M.B.E., M.A., Reader in Taxonomy*
R. A. French, M.A., PH.D., Senior Lecturer in Geography*
D. B. Fry, PH.D., Professor of Experimental Phonetics
J. Garside, PH.D., C.ENG., M.I.CHEM.E., Lecturer in Chemical Engineering*
A. C. Gimson, B.A., Professor of Phonetics
Frieda Goldman-Eisler, DR.PHIL., Professor of Psycholinguistics
G. P. Goold, A.M., PH.D., Professor of Latin (from 1 July 1973)
E. G. Gray, B.SC., PH.D., Professor of Anatomy (Cytology)
A. L. Greenbaum, PH.D., D.SC., Professor of Biochemistry
G. V. Groves, M.A., PH.D., Professor of Physics
H. Grüneberg, PH.D., M.D., D.SC., F.R.S., Professor of Genetics
J. R. Hale, M.A., F.S.A., Professor of Italian
G. Hall, PH.D., Senior Lecturer in French*†
E. C. B. Hall-Craggs, M.A., M.B., B.CHIR., PH.D., Reader in Anatomy*
E. W. Handley, M.A., F.B.A., Professor of Greek
R. D. Harkness, B.SC., M.B., B.S., M.R.C.S., L.R.C.P., Professor of Physiology
D. R. Harris, M.A., B.LITT., PH.D., Lecturer in Geography*
E. J. Harris, PH.D., D.SC., D.I.C., Reader in Biophysics*
H. Harris, M.A., M.D., F.R.C.P., F.R.S., Galton Professor of Human Genetics
N. B. Harte, B.SC.(ECON.), Lecturer in History*
R. J. Hawkes, PH.D., Lecturer in Environmental Studies*
F. F. Heymann, B.SC.(ENG.), PH.D., Professor of Physics
D. C. Holland, M.A., Professor of English Law
Ted Honderich, B.A., PH.D., Reader in Philosophy*
R. G. Hopkinson, B.SC.(ENG.), PH.D., C.ENG., HON.R.I.B.A., F.I.E.E., F.I.H.V.E., P.P.ILLUM.E.S., Haden-Pilkington Professor of Environmental Design and Engineering

*See footnote on p. 109. †Fellow of the College.

J. Hurstfield, D.LIT., Astor Professor of English History†

A. F. Huxley, M.A., D.SC., M.D., F.R.S., Professor of Physiology and Royal Society Research Professor

E. R. H. Ivamy, LL.D., Professor of Law†

K. J. Ives, D.SC.(ENG.), PH.D., C.ENG., M.I.C.E., M.A.S.C.E., Professor of Public Health Engineering

D. W. James, M.B., B.S., M.R.C.S., L.R.C.P., Professor of Anatomy

R. E. Jennings, PH.D., Reader in Physics*

B. R. Jewell, PH.D., M.B., B.S., Reader in Experimental Physiology*

D. W. J. Johnson, B.A., B.LITT., Professor of French History

M. A. Jones, M.A., D.PHIL., Commonwealth Fund Professor of American History

Sheila Heywood Jones, M.A., PH.D., Lecturer in Psychology*

W. J. D. Jones, B.SC.(ENG.), PH.D., A.R.S.M., D.I.C., A.I.M., Reader in Engineering Metallurgy* (from 1 February 1973)

H. Kalmus, M.D., D.SC., Professor of Biology

Sir Bernard Katz, M.D., PH.D., D.SC., F.R.C.P., F.R.S., Professor of Biophysics†

J. H. Kells, M.A., Reader in Greek and Latin*

K. O. Kemp, B.SC.(ENG.), PH.D., C.ENG., M.I.C.E., M.I.STRUCT.E., Chadwick Professor of Civil Engineering

G. E. Kenshole, B.SC.(ENG.), B.A., C.ENG., M.I.E.E., Lecturer in Electronic and Electrical Engineering*

K. A. Kermack, PH.D., Reader in Vertebrate Palaeontology*

J. F. Kermode, M.A., F.R.S.L., Lord Northcliffe Professor of Modern English Literature

O. H. G. Koenigsberger, D.ENG., DIP.ENG., R.I.B.A., A.M.R.T.P.I., Professor of Development Planning

T. H. Lambert, B.SC.(ENG.), PH.D., HON.R.C.N.C., C.ENG., M.I.MECH.E., Professor of Mechanical Engineering

D. R. Laurence, M.D., F.R.C.P., Professor of Pharmacology and Therapeutics

A. J. Layton, PH.D., Research Fellow in Chemistry*§

Anna L. M. Lepschy, M.A., B.LITT., Lecturer in Italian*

D. Lewis, D.SC., F.R.S., Quain Professor of Botany

N. Lichfield, B.SC., PH.D., C.ENG., P.P.R.T.P.I., F.R.I.C.S., M.I.MUN.E., Professor of the Economics of Environmental Planning

D. V. Lindley, M.A., Professor of Statistics

The Right Hon. Lord Llewelyn-Davies, M.A., R.I.B.A., M.R.T.P.I., Professor of Urban Planning

The Right Hon. Lord Lloyd, M.A., LL.D., Quain Professor of Jurisprudence†

A. A. Long, B.A., PH.D., Reader in Greek and Latin*

D. Lowenthal, M.A., PH.D., Professor of Geography

J. Lynch, M.A., PH.D., Professor of Latin American History

A. Maccoll, PH.D., D.SC., F.R.I.C., Professor of Chemistry

*See footnote on p. 109. †Fellow of the College §Elected as an Assessor from 1 October 1972; appointed to membership of Board on 20 February 1973, following amendment of Statute 24.

T. D. McFarland, M.A., Lecturer in German*

D. McNally, M.SC., PH.D., Senior Lecturer in Physics and Astronomy*

Sir Harrie Massey, D.SC., PH.D., LL.D., F.R.S., Quain Professor of Physics, *Vice-Provost*

A. P. Mathias, PH.D., Professor of Biochemistry

W. R. Mead, D.SC.(ECON.), PH.D., F.D., Professor of Geography

Maxine P. M. Merrington, PH.D., Lecturer in Statistics and Computer Science*

R. Miledi, M.D., F.R.S., Professor of Biophysics

D. J. Millen, PH.D., D.SC., Professor of Chemistry

M. A. Millner, B.A., LL.D., B.C.L., Professor of Law

N. A. Mitchison, D.PHIL., F.R.S., Jodrell Professor of Zoology and Comparative Anatomy

A. D. Momigliano, M.A., D.LITT., F.B.A., Professor of Ancient History

J. L. Mongar, PH.D., Professor of Pharmacology

J. W. Mullin, PH.D., D.SC., C.ENG., F.I.CHEM.E., F.R.I.C., Professor of Chemical Engineering

J. Musgrove, B.ARCH., R.I.B.A., Professor of Architecture

J. E. Parkin, PH.D., Lecturer in Chemistry*

E. A. Power, D.SC., PH.D., Professor of Mathematics

Randolph Quirk, M.A., PH.D., D.LIT., Quain Professor of English Language and Literature†

B. R. Rabin, M.SC., PH.D., Professor of Biochemistry

P. M. Rattansi, M.A., PH.D., Professor of History and Philosophy of Science

K. J. Rawson, R.C.N.C., C.ENG., F.R.I.N.A., Professor of Naval Architecture

J. H. Ridd, PH.D., D.SC., Professor of Chemistry

D. J. Robinson, PH.D., Lecturer in Geography*

C. A. Rogers, D.SC., F.R.S., Astor Professor of Mathematics†

P. N. Rowe, B.SC.(TECH.), PH.D., D.SC.(ENG.), C.ENG., F.I.CHEM.E., D.I.C., Ramsay Memorial Professor of Chemical Engineering

E. C. Ryder, M.A., LL.B., Professor of English Law

P. A. Samet, PH.D., F.B.C.S., Professor of Computer Science

E. H. Scamell, LL.M., Professor of English Law

H. O. Schild, M.D., PH.D., D.SC., F.R.S., Professor of Pharmacology

G. Schwarzenberger, PH.D., DR.JUR., Professor of International Law

A. F. D. Scott, B.SC., Research Assistant in Physics and Astronomy*§

J. W. Scott, B.A., A.L.A., Librarian

M. A. Screech, D.LITT., Fielden Professor of French Language and Literature

M. J. Seaton, PH.D., F.R.S., Professor of Physics†

R. J. Smeed, C.B.E., PH.D., Professor of Traffic Studies

A. J. Smith, B.ARCH., DIP.L.D., M.U.P., R.I.B.A., A.I.L.A., Lecturer in Environmental Studies*

C. A. B. Smith, M.A., PH.D., Weldon Professor of Biometry

H. S. Smith, M.A., Edwards Professor of Egyptology

*See footnote on p. 109. †Fellow of the College. §See footnote on p. 111.

M. G. Smith, PH.D., Professor of Anthropology

F. Sondheimer, PH.D., F.R.S., Professor of Chemistry and Royal Society Research Professor

Stephen Spender, C.B.E., D.LITT., Professor of English

J. Spraos, M.A., Professor of Political Economy

B. G. Spratt, B.SC., Associate Research Assistant in Botany and Microbiology*§

R. Staveley, B.A., F.L.A., Senior Lecturer in Library, Archive, and Information Studies*

S. Stein, PH.D., Professor of Hebrew

Hannah Steinberg, PH.D., Professor of Psychopharmacology

J. P. Stern, M.A., PH.D., Professor of German

K. Stewartson, M.A., PH.D., F.R.S., Goldsmid Professor of Mathematics

M. Stone, PH.D., Professor of Probability and Statistics

R. N. Strange, PH.D., Lecturer in Botany and Microbiology*

K. W. Swart, LITT.D.(LEIDEN), Professor of Dutch History and Institutions

J. A. C. Thomas, M.A., LL.B., Professor of Roman Law

E. H. Thompson, O.B.E., M.A., SC.D., F.R.I.C.S., Professor of Photogrammetry and Surveying

M. L. Tobe, PH.D., D.SC., Professor of Chemistry

William Townsend, Professor of Fine Art†¶

Mary R. Truter, PH.D., D.SC., Professor of Chemistry (to 31 March 1973)

D. A. Turin, DIPL.ARCH., S.C.A., F.I.O.B., London Master Builders Professor of Building

E. G. Turner, M.A., DR.PHIL.ET LETTRES, F.B.A., Professor of Papyrology

N. R. N. Tyacke, M.A., D.PHIL., Lecturer in History*

V. P. Underwood, PH.D., D.ÈS L., Professor of French

P. Venning, M.S.R., Assistant and Radiographer in Anatomy and Embryology*§

C. A. Vernon, D.SC., Professor of Chemistry

A. C. Walker, M.SC., PH.D., C.ENG., A.F.R.AE.S., A.R.C.S.T., M.I.MECH.E., Reader in Structural Engineering*

P. D. Wall, M.A., D.M., Professor of Anatomy

G. L. Watson, M.A., PH.D., D.SC., Professor of Mathematics

N. F. Watson, B.ARCH., R.I.B.A., Bartlett Professor of Architecture

D. J. B. White, PH.D., Senior Lecturer in Botany and Microbiology*

J. E. C. T. White, M.A., PH.D., Durning-Lawrence Professor of the History of Art

G. P. Wibberley, C.B.E., M.S., PH.D., Ernest Cook Professor of Countryside Planning

D. R. Wilkie, M.D., M.B., B.S., F.R.C.P., F.R.S., Jodrell Professor of Physiology†

Elizabeth M. Wilkinson, PH.D., LL.D., D.LITT., F.B.A., Professor of German

P. G. Williams, B.SC., Lecturer in Mathematics*

*See footnote on p. 109. †Fellow of the College. §See footnote on p. 111. ¶Died 4 July 1973.

D. M. Wilson, M.A., F.S.A., Professor of Medieval Archaeology
R. Wilson, PH.D., Perren Professor of Astronomy (from 1 January 1973)
Richard Wollheim, M.A., F.B.A., Grote Professor of Philosophy of Mind and Logic
J. Z. Young, M.A., D.SC., F.R.S., Professor of Anatomy

ASSESSORS

EX OFFICIO—The Sub-Deans of the Faculties:

Arts: C. J. Holdsworth, M.A., PH.D.
Laws: R. H. F. Austin, B.A., LL.M.
Science: C. Dodd, PH.D.
Engineering: H. Marriott, B.ENG., B.SC.(ECON.), C.ENG., F.I.E.E.
Medical Sciences: Pauline M. Meadow, M.A., PH.D.
Environmental Studies: R. J. Fisher, R.I.B.A.

*See footnote on p. 109. †Fellow of the College.

APPENDIX III

HONORARY FELLOW AND FELLOWS

The following elections were made in 1973:

HONORARY FELLOW

The Rt Hon. Lord Holford, P.P.R.I.B.A., M.R.T.P.I., F.I.L.A., Emeritus Professor of Town Planning, University College London; Director of the Leverhulme Trust Fund.

FELLOWS

Mr John Christopher Roderick Dow, an Executive Director at the Bank of England; formerly Assistant Secretary-General, Organisation for Economic Co-operation and Development, Paris.

Dr Paul Fatt, F.R.S., Reader in Biophysics, University College London.

Professor Victor Gold, F.R.S., Professor of Chemistry and Head of Department of Chemistry, King's College, London.

Dr Gordon Hall, Senior Lecturer, Department of French, University College London; Warden of Ramsay Hall; Chairman of Shenley Property Committee and Shenley Grounds Committee; Senior Treasurer of the Union.

Dr Peter Julius Denison Heaf, F.R.C.P., Consultant Physician to University College Hospital, and Physician, Camden Chest Clinic.

Mr Hyman Kestelman, Reader in Pure Mathematics, University College London.

Sir John Edward Killick, K.C.M.G., formerly Her Majesty's Ambassador to the U.S.S.R.

Mr Francis David Penny, F.R.S.E., Managing Director of Y. Ard Limited and Director of Yarrow Limited.

Professor Leonard Bertram Schapiro, F.B.A., Professor of Political Science, with special reference to Russian Studies, London School of Economics and Political Science.

Mrs Katherine Lilian Somerville (née Tillard), C.M.G., O.B.E., formerly Director of Fine Arts Department, British Council; Fellow of the Royal College of Art.

APPENDIX IV

PRINCIPAL CHANGES IN THE ACADEMIC STAFF

FACULTY OF ARTS

ANTHROPOLOGY

Death: Daryll Forde, PH.D., F.B.A. (Emeritus Professor and Honorary Research Fellow).

ARCHAEOLOGY

Appointment: A. W. Johnston, M.A., D.PHIL. (Lecturer), formerly Assistant Lecturer, University College Dublin.

ENGLISH LANGUAGE AND LITERATURE

Appointment: Mrs Antonia S. Duffy, B.A. (Lecturer), formerly Lecturer, Department of Extra-Mural Studies, University of London.

Death: Professor B. A. Wright, M.A. (Honorary Research Fellow).

FINE ARTS

Appointments: D. Leverett (Part-time Lecturer).
C. A. Rawlence, M.A. (Part-time Lecturer), formerly held temporary appointment in Department of History of Art.
A. J. Weelen (Part-time Lecturer).

Resignations: Bernard Cohen (Lecturer).
H. R. Shark, B.S., M.A. (Part-time Lecturer).

Death: William Townsend (Professor of Fine Art).

FRENCH

Appointments. A. Calder, B.A. (Lecturer), formerly Assistant Master, Maidstone Grammar School.
E. F. Gwyneth Tootill, B.A. (Lecturer), formerly Lecturer, University of Bristol.

GEOGRAPHY

Appointment: D. Lowenthal, M.A., PH.D. (Professor of Geography), formerly Secretary and Research Associate, American Geographical Society.

Resignations: T. J. Chandler, M.SC., PH.D. (Professor of Geography), to Chair of Geography, University of Manchester.
D. J. Robinson, B.A., PH.D. (Lecturer), to Associate Professorship, University of Syracuse.

GERMAN

Appointments: J. P. Stern, M.A., PH.D. (Professor of German), formerly University Lecturer in German, Fellow and Tutor, St John's College, Cambridge.
A. K. Stevens, M.A., PH.D. (Lecturer), formerly Research Fellow and Director of German Studies, Clare College, Cambridge.

GREEK

Appointment: R. I. Ireland, B.A. (Lecturer), from Balliol College, Oxford.

Resignation: A. A. Long, B.A., PH.D. (Reader in Greek and Latin), to Gladstone Chair of Greek, University of Liverpool.

HEBREW AND JEWISH STUDIES

Appointment: M. P. Weitzmann, B.A., B.SC. (Lecturer), formerly student in Department.

HISTORY

Appointment: M. B. Stokes, B.A. (Lecturer), from Nuffield College, Oxford.

HISTORY OF ART

Appointment: W. H. T. Vaughan, B.A. (Lecturer), formerly Assistant Keeper, Tate Gallery.

LATIN

Appointment: G. P. Goold, A.M., PH.D. (Professor of Latin), formerly Professor of Greek and Latin, Harvard University.
R. I. Ireland, see GREEK.

Resignation: A. A. Long, see GREEK.

LIBRARY, ARCHIVE AND INFORMATION STUDIES

Resignations: Arthur Brown, M.A., D.LIT. (Professor of Library Studies), to Chair of English, Monash University.
E. W. Denham, M.A. (Part-time Lecturer).

PHILOSOPHY

Appointment: M. J. Budd, M.A., PH.D. (Lecturer), formerly held temporary appointment in Department.

PHONETICS AND LINGUISTICS

Appointment: N. V. Smith, PH.D. (Reader in Linguistics), formerly Lecturer, School of Oriental and African Studies.

SCANDINAVIAN STUDIES

Resignation: W. Glyn Jones, M.A., PH.D. (Reader in Danish), to Chair of Scandinavian Studies, University of Newcastle upon Tyne.

FACULTY OF LAWS

LAWS

Appointments: R. C. Austin, B.A., LL.B. (Lecturer), from King's College, London.
D. J. Stephens, LL.M. (Lecturer), formerly Lecturer, University of Bristol.

Resignations: H. Hanak, M.A. (Lecturer), to Lectureship, School of Slavonic and East European Studies.
B. Hargrove, LL.M., PH.D. (Lecturer), to private practice.

P. J. Mahoney, B.A., LL.M. (Lecturer), to private practice.
D. D. Prentice, LL.B., J.D. (Lecturer), to Fellowship, Pembroke College, Oxford.
A. M. Sutton, LL.M. (Lecturer), to Commission of the European Economic Community, Brussels.
E. Tabachnik, LL.M. (Lecturer), to private practice.

FACULTY OF SCIENCE

BOTANY AND MICROBIOLOGY

Appointments: D. H. Roscoe, M.A., D.PHIL. (Lecturer), formerly Scientific Officer, Imperial Cancer Research Fund, and honorary appointment in Department.
Mrs Philippa J. Talmud, PH.D. (Quain Student in Biology), formerly student in Department.

Resignations: L. Fowden, PH.D., F.R.S. (Professor of Plant Chemistry), to Directorship of Rothamsted Experimental Station; appointed Visiting Professor to the Department.
M. G. P. Stoker, M.A., M.D., F.R.S. (Visiting Professor).

CHEMISTRY

Appointment: B. P. Roberts, PH.D. (Lecturer), formerly held Turner and Newall Research Fellowship in Department.

Resignations: Mary R. Truter, PH.D., D.SC. (Professor of Chemistry), to Rothamsted Experimental Station; appointed Visiting Professor to the Department.
J. F. Wilson, PH.D. (Lecturer), to industry.

HUMAN GENETICS AND BIOMETRY

Appointment: D. P. Brenton, M.D., M.R.C.P. (Sir Jules Thorn Senior Lecturer, joint appointment with University College Hospital Medical School), formerly held M.R.C. Travelling Fellowship.

Retirement: H. Kalmus, M.D., D.SC. (Professor of Biology); to be Honorary Research Fellow.

MATHEMATICS

Resignation: G. N. Lance, PH.D., F.A.C.S., F.B.C.S. (Visiting Professor).

Death: W. R. Dean, M.A. (Emeritus Professor and Honorary Research Fellow).

PHYSICS AND ASTRONOMY

Appointment: R. Wilson, B.SC., PH.D. (Perren Professor of Astronomy), formerly Director, Astrophysics Research Unit, Science Research Council.

Retirements: R. C. Brown, PH.D. (Part-time Senior Lecturer and Careers Adviser).
E. W. Foster, B.SC., A.R.C.S. (Lecturer).

PSYCHOLOGY

Appointments: H. C. Plotkin, PH.D. (Lecturer), formerly member of scientific staff, Medical Research Council, and honorary appointment in Department.

Valerie J. Walker, PH.D. (Lecturer), formerly Clinical Psychologist, Tavistock Clinic.

Resignation: P. N. Johnson-Laird, PH.D. (Lecturer), to Lectureship in Department of Psychology, University of Sussex.

ZOOLOGY AND COMPARATIVE ANATOMY

Resignations: G. Pontecorvo, PH.D., D.SC., F.R.S. (Visiting Professor).

Jean M. Trent, B.SC. (Research Fellow).

FACULTY OF ENGINEERING

CHEMICAL ENGINEERING

Appointments: D. G. Horne, PH.D. (Lecturer), formerly Lecturer, University of Leeds.

S. P. Waldram, B.TECH., M.S. (Lecturer), formerly held grant-supported research appointment in Department.

CIVIL AND MUNICIPAL ENGINEERING

Resignation: R. E. Allsop, M.A., PH.D. (Lecturer) to Directorship of the Research Group in Transport Operations, University of Newcastle upon Tyne.

MECHANICAL ENGINEERING

Appointments: E. C. Goldman (Visiting Professor), Operation and Production Division of Shell International.

W. R. Eatock Taylor, M.A., M.S., PH.D. (Lecturer), formerly held grant-supported research appointment in Department.

Resignations: W. K. Allan, B.SC., M.S., PH.D., C.ENG., A.M.I.MECH.E., M.R.I.N.A. (Lecturer), to Assistant Directorship (External Affairs), City of Birmingham Polytechnic.

R. K. Burcher, B.SC.(ENG.), C.ENG., R.C.N.C., M.R.I.N.A. (Lecturer), to Ministry of Defence Ship Department, Bath.

PHOTOGRAMMETRY AND SURVEYING

Appointment: T. O. Crompton, M.SC. (Lecturer), from private practice.

FACULTY OF MEDICAL SCIENCES

ANATOMY AND EMBRYOLOGY

Appointments: W. F. Bynum, B.A., M.D. (Lecturer and Head of Sub-Department of History of Medicine), from University of Cambridge.

Mrs Sheila J. Jones, B.D.S., L.D.S., R.C.S. (Lecturer), formerly held grant-supported research appointment in Department.

Resignations: Edwin Clarke, M.D., F.R.C.P. (Reader in History of Medicine), to Directorship of the Wellcome Institute, to be Honorary Research Fellow.

Jonathan Miller, M.B., B.CHIR. (Research Fellow), to be Honorary Research Fellow.

J. W. Noble, PH.D. (Research Fellow).

T. R. Price, B.SC. (Lecturer), to University College Hospital Medical School.

BIOPHYSICS

Appointment: Gertrude Falk, B.S., PH.D. (Lecturer), formerly held grant-supported research appointment in Department.

PHARMACOLOGY

Appointment: E.-S. K. Assem, M.B., B.CH., PH.D., M.R.C.P. (Senior Research Fellow), formerly held grant-supported research appointment in Department.

C. C. Jordan, PH.D. (Lecturer), formerly held temporary appointment in Department.

Retirements: Professor F. Bergel, D.PHIL.NAT., PH.D., D.SC., F.R.I.C.S., F.R.S. (Honorary Lecturer).

H. O. Schild, M.D., PH.D., D.SC., F.R.S. (Professor of Pharmacology); to be Honorary Lecturer.

FACULTY OF ENVIRONMENTAL STUDIES

SCHOOL OF ENVIRONMENTAL STUDIES

Appointments: J. Andrews, T.D., A.I.O.B., M.B.I.M. (Lecturer), formerly held temporary appointment in Department.

H. H. Moss, B.A., M.ARCH. (Lecturer), formerly held grant-supported research appointment in Department.

Resignations: R. A. Howard, A.A.DIPL., R.I.B.A. (Lecturer).

B. Schlaffenberg, DR.ARCH., M.R.T.P.I. (Part-time Visiting Lecturer).

A. J. Smith, B.ARCH., DIP.L.D., M.U.P., R.I.B.A., A.I.I.A. (Lecturer), to private practice.

Y. Weymouth, B.A., B.S. (Lecturer).

APPENDIX V

PUBLIC LECTURES

ENDOWED LECTURES

BARLOW LECTURES ON DANTE

Professor Nicolai Rubinstein, Westfield College: 'Dante and Nobility' (three lectures)

DOROTHEA COKE MEMORIAL LECTURE IN NORTHERN STUDIES

Dr Folke Ström, Gothenburg: '*Níð, ergi* and Old Norse moral attitudes'

COMMONWEALTH FUND LECTURE

Professor W. LaFeber, Cornell: 'The United States, Great Britain and China, 1944–45'

RICKMAN GODLEE LECTURE

Professor Edmund Leach, Cambridge: 'Chain-male: some comments on the uses of Ancestry'

THE MILDNER LECTURE

Mr James Redmond: 'Radio and Cable Links for Broacasting Networks'

THE NEALE LECTURE IN ENGLISH HISTORY

Professor M. M. Postan: 'English Gentry of the Thirteenth Century'

LORD NORTHCLIFFE LECTURES IN LITERATURE

Professor Christopher Ricks, Bristol: 'Keats and Embarrassment' (four lectures)

SETON MEMORIAL LECTURE

Professor G. W. S. Barrow, Newcastle-upon-Tyne: 'The Scots Thane'

SHEARMAN MEMORIAL LECTURES

Professor Kenneth J. Arrow, Harvard: 'Social Choice' (three lectures)

INAUGURAL LECTURES

Professor D. E. N. Davies, Professor of Electrical Engineering: 'Commuters, Computers and Automation of Land Transport'

Professor H. S. Smith, Edwards Professor of Egyptology: 'Memphis under the last of the Pharaohs'

Professor J. P. Stern, Professor of German: 'History and Allegory in Thomas Mann's *Doktor Faustus*'

Professor J. E. C. T. White, Durning-Lawrence Professor of the History of Art: 'Duccio and Giotto'

LUNCH-HOUR LECTURES AND FILMS

LECTURES

Mr A. L. Allan: 'The Role of Satellites in Geodetic Surveying'
The Rt Hon Lord Annan: 'Do Politicians and Civil Servants Menace the Universities?' and 'Binary, Monopoly or Murray'
Dr A. Boyde: 'Scanning Electron Microscopy—Science or Just a Pretty Face?'
Mr B. C. Brookes: 'The Scientific Study of Information'
Professor E. H. S. Burhop: 'Recent Ideas on the Structure of Matter'
Dr W. E. Butler: 'The Great Red Scare'
Professor J. R. Hale: 'Saving Venice: Lions and Livelihoods'
Mr G. E. Hollis: 'Cities in Floods: A View from the River'
Dr Ted Honderich: 'Political Violence'
Professor R. G. Hopkinson: 'There are Lorries at the Bottom of my Garden'
Dr R. Ilson: '"You" and "Thou" etc. in Shakespeare'
Dr G. T. Martin: 'The Hieroglyphic Tradition'
Dr J. R. Morris: 'The Birth and Basis of English Government'
Dr Karin R. Petherick: 'The Nobel Prize for Literature: Provocation or Pusillanimity?'
Professor Randolph Quirk: 'That's their Pidgin'
Professor P. M. Rattansi: 'Newton and the Cambridge Platonists'
Mr N. J. Rau: 'The Economics of Birth Control'
Dr J. E. Robinson: 'Gower Street Geologists—1831-1900'
Professor M. A. Screech: 'Rabelais looks at the future'
Mr A. J. P. Taylor: 'Stalin—20 Years After'
Professor E. G. Turner: 'On Translating Menander'
Dr J. J. Valberg: 'Moral Relativism'
Mr W. H. T. Vaughan: 'Caspar David Friedrich'
Dame Veronica Wedgwood: 'The English Civil War: The Lighter Side'

FILMS

'Idea, Image and Sound' (Richard Williams' film 'The Little Island'), introduced by David James
'Abstract Animation in the Film' introduced by David James
'Film Animation in Eastern Europe' introduced by David James (two films)
'Georges Méliès' (English version of Franju's film on the pioneer French film-maker), introduced by James Leahy
'City of Gold' and 'Gold' (two films by Colin Low and Wolf Koenig from the National Film Board of Canada), introduced by James Leahy
'Experiments with Film and Music "Night on the Bare Mountain" (France, 1934); "Papageno" (Germany, 1935); "Pacific 231" (France, 1949)' introduced by James Leahy
'The Days of Whisky Gap' (by Colin Low) and 'Trout Stream' (by Hugh O'Connor) (two films from the National Film Board of Canada), introduced by James Leahy

LECTURES ARRANGED BY COLLEGE DEPARTMENTS

ENGLISH LANGUAGE AND LITERATURE

Professor Richard Ellmann, Oxford: 'James Joyce the Myth-Maker'

PHYSIOLOGY

Dr D. R. Trentham, Bristol: 'Transient Kinetic Studies of the ATPase of Myosin and its Proteolytic Subfragments'

SCANDINAVIAN STUDIES

Mr H. Agerbak: 'Light out of Darkness: war-time communication between Denmark and Britain'

APPENDIX VI

NUMBERS OF STUDENTS
SESSION 1972–73

	Under-graduate	*Post-graduate*	*Totals*
Faculty of Arts	1,166 (283)	457 (176)	1,623 (459)
Department of Political Economy	190 (3)	27 (6)	217 (9)
Slade School of Fine Art	76 (2)	110 (6)	186 (8)
	1,432 (288)	594 (188)	2,026 (476)
Faculty of Science	1,127 (4)	*551 (106)	1,678 (110)
Faculty of Medical Sciences ...	†271 (1)	1 (1)	272 (2)
Faculty of Engineering	361 (1)	217 (42)	578 (43)
Faculty of Laws	‡335 (22)	§162 (44)	497 (66)
Faculty of Environmental Studies ...	135 (1)	269 (52)	404 (53)
	3,661 (317)	¶1,794 (433)	5,455 (750)

The figures in brackets indicate the number of part-time students included in the total under each head.

*This figure includes 84 full-time and 29 part-time postgraduate students working in the College Faculty of Medical Sciences who were registered in the University Faculty of Science.

†There are included as full-time 40 students, studying for 2nd M.B., who left the College at the end of the second term, having concluded the course.

‡This figure includes 34 full-time undergraduate students studying for a B.Sc. in International Relations who were registered in the University Faculty of Economics.

§This figure includes 6 full-time and 2 part-time postgraduate students studying for an M.Sc. in International Relations who were registered in the University Faculty of Economics.

¶Of this number 1,367 were registered for higher degrees of the University of London; the remainder were working for higher diplomas of the University or the College, or for the higher degrees of other Universities or were engaged in research work, or attending postgraduate lecture courses.

APPENDIX VII

GEOGRAPHICAL DISTRIBUTION OF STUDENTS, SESSION 1972–73

	Under-graduate	*Post-graduate*	*Totals*
UNITED KINGDOM	3,170	1,125	4,295
BRITISH COMMONWEALTH OF NATIONS			
Australia	3	39	42
Canada	16	65	81
Cyprus	37	13	50
Hong Kong	31	5	36
India	24	23	47
Kenya	14	6	20
Malaysia	29	8	37
Nigeria	9	14	23
Sri Lanka	7	19	26
21 other countries	44	54	98
OTHER PARTS OF THE WORLD			
Brazil	2	12	14
Egypt	0	13	13
Eire	8	3	11
France	26	14	40
Greece	13	53	66
Iran	23	20	43
Iraq	6	16	22
Japan	8	6	14
Pakistan	12	9	21
South Africa	8	8	16
Spain	6	8	14
Turkey	7	19	26
U.S.A.	58	97	155
Venezuela	6	11	17
West Germany	21	9	30
52 other countries (including 7 stateless students) ...	73	125	198
	3,661	1,794	5,455

SUMMARY

United Kingdom	4,295
British Commonwealth of Nations ...	460
Other parts of the world	700
	5,455

APPENDIX VIII

ADMISSION OF FIRST DEGREE AND FIRST DIPLOMA STUDENTS SESSION 1972–73

FACULTY OF ARTS	*Students admitted October* 1972
B.A. Honours	
Anthropology & Linguistics	6
Archaeology	2
Classics	14
English	39
English & History of Art	4
English & Linguistics	3
French	28
French & History of Art	2
French & Linguistics	4
French & Philosophy	4
Geography	46
German	19
German & History of Art	2
German & Linguistics	5
German & Norwegian	1
German & Swedish	1
Hebrew	2
Hebrew & Jewish Studies	3
History (Ancient & Medieval)	2
History (Medieval & Modern)	41
History & History of Art	4
Italian	5
Italian & History of Art	2
Latin (with Greek)	2
Modern Iberian & Latin American Regional Studies	13
Norwegian & Icelandic	1
Philosophy	22
Philosophy & Economics	1
Philosophy & History of Art	6
Philosophy & Linguistics	1
Scandinavian Studies	12
	297
B.Sc.(Econ.)	73
University Diploma in Fine Art	12

	Students admitted October 1972
FACULTY OF SCIENCE	
B.Sc. Degree	
Anthropology	25
Astronomy	18
Biochemistry	23
Biology	8
Botany	3
Chemistry	56
Chemistry & Physics	6
Geography	21
Geology	17
Mathematics	51
Microbiology	31
Pharmacology	6
Physics	31
Physics (Applied)	9
Physiology	8
Psychology	39
Statistics	14
Zoology	17
	383
FACULTY OF LAWS	
LL.B.	105
B.Sc. in International Relations	10
	115
FACULTY OF ENGINEERING	
B.Sc. (Eng.)	
Civil & Municipal Engineering	32
Electronic & Electrical Engineering	36
Mechanical Engineering	11
Mechanical Engineering (Naval Architecture)	7
Chemical Engineering	26
	111
FACULTY OF MEDICAL SCIENCES	
2nd M.B.	108
2nd B.D.S.	49
	157
FACULTY OF ENVIRONMENTAL STUDIES	
B.Sc. Degree in Architecture, Planning Building and Environmental Studies	45
Total	1,193

APPENDIX IX

UNIVERSITY FIRST DEGREE AND DIPLOMA AWARDS

1 OCTOBER 1972—30 SEPTEMBER 1973

FACULTY OF ARTS

B.A. Degree	*1st Class Honours*	*2nd Class Honours Upper Div.*	*2nd Class Honours Lower Div.*	*3rd Class Honours*	*Pass*	*Total*
Archaeology	—	2	—	—	—	2
Classics	1	4	5	—	—	10
English	7	13	8	3	—	31
French	3	5	7	3	—	18
Geography	2	15	11	—	—	28
German	3	8	5	2	—	18
Hebrew	—	3	2	—	—	5
Hebrew Literature & Jewish History	—	2	1	—	—	3
History	2	17	14	4	—	37
Italian	—	2	1	—	—	3
Jewish History	—	1	—	—	—	1
Latin	—	1	—	1	—	2
Modern Iberian and Latin American Regional Studies	1	1	5	1	—	8
Philosophy	—	6	10	2	—	18
Scandinavian Studies	—	3	7	2	—	12
Anthropology and Linguistics	2	1	1	1	—	5
English and History of Art	1	2	—	—	—	3
English and Linguistics	—	3	—	—	—	3
French and Linguistics	—	—	3	—	—	3
French and Philosophy	—	1	—	—	—	1
German and History of Art	1	1	—	—	—	2
German and Linguistics	—	—	2	—	—	2
History & History of Art	—	1	2	—	—	3
Italian & History of Art	—	—	1	—	—	1
Philosophy & History of Art	—	1	—	1	—	2
	23	93	85	20	—	221

B.A. Degree (Aegrotat)					*Pass*	*Total*
French	—	—	—	—	1	1
Italian	—	—	—	—	1	1

University Diploma in Fine Art: 13 students passed.

FACULTY OF LAWS

	1st Class Honours	2nd Class Honours Upper Div.	2nd Class Honours Lower Div.	3rd Class Honours	Pass	Total
LL.B. Degree	3	18	43	9	5	78
LL.B. Degree (Aegrotat)	—	—	—	—	1	1

FACULTY OF SCIENCE

B.Sc. Degree	1st Class Honours	2nd Class Honours Upper Div.	2nd Class Honours Lower Div.	3rd Class Honours	Pass	Total
Anatomy	4	4	—	—	—	8
Anthropology	3	7	6	—	—	16
Applied Physics	2	3	1	4	—	10
Architecture, Planning, Building & Environmental Studies	5	14	19	5	3	46
Astronomy	2	3	6	4	1	16
Biochemistry	1	8	12	3	—	24
Botany	1	4	3	—	—	8
Chemistry	6	18	12	15	3	54
Chemistry & Physics	1	—	2	—	—	3
Genetics	1	—	4	2	—	7
Geography	2	20	8	3	—	33
Geology	—	5	9	3	1	18
Information Science	—	—	3	2	—	5
Mathematics	10	4	13	9	1	37
Microbiology	3	10	9	4	—	26
Pharmacology	1	13	2	—	—	16
Physics	5	5	3	4	1	18
Physiology	2	14	2	—	—	18
Psychology	6	15	13	6	—	40
Statistics	3	1	3	1	2	10
Zoology	2	9	7	—	—	18
	60	157	137	65	12	431

FACULTY OF ENGINEERING

	1st Class Honours	2nd Class Honours Upper Div.	2nd Class Honours Lower Div.	3rd Class Honours	Pass	Total
B.Sc. (Engineering) Degree	10	22	17	13	6	68
B.Sc. (Engineering) Degree in Chemical Engineering	5	10	5	6	5	31
B.Sc. (Engineering) Degree (Aegrotat)	—	—	—	—	1	1

FACULTY OF ECONOMICS

	1st Class Honours	2nd Class Honours Upper Div.	2nd Class Honours Lower Div.	3rd Class Honours	Pass	Total
B.Sc. (Economics) Degree	—	16	28	4	1	49
B.Sc. in International Relations Degree	—	8	7	—	—	15
B.Sc. in International Relations Degree (Aegrotat)	—	—	—	—	1	1

FACULTY OF MEDICINE

Second Examination for Medical Degrees: 104 students passed.

Second Examination for Dental Degrees: 43 students passed.

APPENDIX X

UNIVERSITY HIGHER DEGREE AND HIGHER DIPLOMA AWARDS

1 OCTOBER 1972—30 SEPTEMBER 1973

FACULTY OF ARTS

Ph.D. *Anthropology:* †Alice L. Morton. *Architecture:* Brian J. Smith. *English:* Gerald T. Doherty, Oliver S. Pickering, Marya A. C. M. Pool, Johannes F. M. Secker, Ellen J. Shattock, Ian D. Stevens, Geoffrey B. Ursell. *French:* Madeleine E. Andrews, §‡Jennifer J. Beard, §‡Anthony C. Pugh, §Diana B. Tyson. *Geography:* Richard M. Auty, John H. Connell, Roger J. P. Kain, Gary C. McDonald. *German:* Caroline M. Cooper, Wendy Philipson. *Greek:* Mirto Dragona-Monachou. *History:* Robert E. Allen, Ivon S. Asquith Jack N. Babuscio, Douglas G. Long, Mary N. Menezes. *Philosophy:* Kamal H. Shaddad. *Psychology:* Barrie W. J. Dalgleish, Francis J. Odling-Smee. *Phonetics:* John R. Baldwin, Brian L. Butterworth, Madeline M. Haggan. [31]

M.Phil. *Anthropology:* Mark L. Cozin, Bryony J. Orme. *Egyptology:* George A. J. Hart, Elizabeth A. Naylor-Leyland. *English:* Robin D. Smith, Christopher Tingley. *Greek:* Eubert P. Mashaire. *History:* Kaushalya Shrivastava, Jeffrey Weeks. *Geography:* David J. P. Dalton. *Philosophy:* Shekar Das. *Phonetics:* Annemarie F. D. Fischer. *Scandinavian Studies:* William Manhire. *Town Planning:* Jeremy Baster, Antony E. A. Bird, Malcolm G. Challen, Trevor Cornfoot, Roger P. Daniels, James Darlington, Mervyn E. Dobson, Margaret J. Forster, Bruce C. Hartnett, Diana I. Kershaw, Linda M. Leigh, Neville B. Lewthwaite, Daphne C. M. Mair, James B. Powers, Nicholas A. Sharman, Madeleine M. Stewart, Paul K. Tomkins, Christine E. Wharfe, Jeremy W. B. Worth. [32]

M.A. (Old Regs.) *History:* Roger L. Brown [1]

M.A. (New Regs.) *Architecture:* Avra J. Margolis. *Area Studies:* Peter T. Barry, Stephen J. R. Clews, Peter M. Droog, Robert J. E. Fryer, Marian E. Fuller, Susan Gardner, Sylvia H. Griffiths, Peggy J. Janda, Michael C. Judge, Harvey J. Kaye, Justin O. A. Labinjoh, Doreen M. Lucas, Pedro J. Madrid-Abreu, Steven Martin, Janet N. Moody, Maria E. Pereira Caldas, Gordon S. Ray, Hilary K. Thompson, Barbara Threlfall, Jeanette J. Whitehouse, Jeffrey M. Winik. *Classics:* Anne V. Powell-Jones. *English:* Dora E. Black, Graham M. Boardman, Noel C. Burton-Roberts, Kalaya Chitrabongs, *Margaret A. M. Collins, Constance J. Cullen, Pamela E. Grew, Mary E. Hubbard, Susan M. Ramsaran. *German:* Roger A. M. Woods. *History:* John F. Davies, Philip M. Giraldi. *Library and*

§Awarded 1972-73 but not listed in the Annual Report for that year. †Also registered at another Institution. *Awarded a mark of distinction. ‡External student.

Information Studies: Norman W. Beswick, *Raymond G. C. Desmond, Genildo A de Figueriredo, Derek Jones, *Ronald O. Linden, Shirley J. Phillips, Ülker Sanalan, Harold Smith, John E. Spink, Ann E. Wade, Melba C. Williams. [46]

University Postgraduate Diplomas: Archaeology 1; Archive Studies 12¶; Fine Art 38; Library and Information Studies 2‖; Social Anthropology 3, Town Planning 12. [68]

FACULTY OF ECONOMICS

M.Sc. *Economics:* Roger D. Bennett, *Robert J. Dinwiddy, Donald L. P. Lee, Georghios A. Mavroudis, Nasser A. Saidi, Yehia M. Soubra, Robert C. G. Varley, *Margaret Wolstenholme. *International Relations:* Shukry Bishara, Syed M. Javaid, Jeffrey M. Seisler, Gurbax L. Sethi, Mohamed Tarbush. *Planning Studies:* Rosemary E. Barrington, Janet L. Filer, Richard J. Hindle, Richard J. Holland. [17]

FACULTY OF LAWS

Ph.D. Atonia Acevedo, Susan M. Hart, Thomas C. Kavanagh, Gladys O. Omitowoju, John D. Syz, Mustapha A. Yesufa, Mozafar Youssefian. [7]

LL.M. Emmanuel C. Abaraonye, Duncan W. Aitchison, Mary J. Anderson, Photios Antonatos, Dennis H. Asher, Anthony P. Barber, Roger T. Beaman, William J. Bies, Peter W. Bretherton, *Anna Brethima, Cheung Vei-Lun, Christopher M. V. Clarkson, Andrew J. Corby, Susan B. Davies, William D. Duncan, Alberto A. Encomienda, David J. Gaffney, William G. Gibson, William C. Gilmore, Peter H. Goldsmith, Ioannes G. Hadjis, Robert E. Hage, David R. Harris, Geoffrey E. Hart, Herbert M. Kay, John C. Kennedy-Good, Anastase Korakas, Shamin E. Lalani, Enrique Lasarte Perez-Arregui, Kenneth A. Macinnis, Henry E. Markson, Asad Munir, Derek J. M. Murphy, John C. C. North, Gregory F. O'Neill, Edmund J. W. Oyler, Nikolas Papadakis, Jennifer G. Parrish, Philip J. Peacock, Nigel P. Pleming, Anthony Richardson, Peter J. Richardson, John F. Roil, Giyora Shapira, Vijai Sharma, Patrick C. Soares, Friedrich E. Sonderkötter, *Jeffrey E. J. Spender, Dominicus Struye De Swielande, Gregorios Timagenis, Alwyn I. Tonking, Timothy M. S. Tosswill, Clinton A. Townsend, Nicolas A. Tsavliris, Samuel Ward. [55]

University Postgraduate Diplomas: International Law 2; Shipping Law 17. [19]

FACULTY OF SCIENCE

Ph.D. *Anatomy and Embryology:* Carmen M. Antonetty. §David R. Bromham. *Animal Genetics:* Ashley D. S. Wickramaratne. *Architecture:* Carole A. Rawlinson. *Biochemistry:* Joan L. Austoker,

¶2 Candidates awarded mark of distinction. *Awarded a mark of distinction. §Awarded 1972-73 but not listed in the Annual Report for that year. ‖1 Candidate awarded mark of distinction.

Joan L. Betz, Graham H. Coombs, John A. Craft, Ivor H. Evans, David M. Glover, Hector B. Rodriguez, Freddy R. González-Mujica, Robert R. C. Kay, Veronica M. S. Kwan, David R. Nelson, Barbara M. F. Pearse, Geoffrey H. Sunshine. *Biophysics:* Gregor J. Jones. *Botany and Microbiology:* Anthony J. Davy, Valerie J. Gross, Colin Harbour, Philippa J. Kaplan, David J. Linstead, Roger D. Norris, Swarnawathi Senathi Rajah, James H. Slater, Brian G. Spratt, Phyllis G. A. Willshaw. *Chemistry:* †Godfrey S. Beddard, Rosemary C. E. Belford, Ross J. Bunce, Abdul R. Chaudhry, Cyrus H. Chothia, Peter J. Clarke, Brian Durrans, Keith G. Foot, David Griller, Eugene R. Hoff, Robert E. Glass, Takao Maki, Kyriacos C. Nicolaou, Harry Pearson, John H. Rees, David M. Rippon, Brian R. Sanderson, Erich Schmidt, Leslie Smith, Mirtha Umana, Jeremy G. Vinter, John M. Walker, Michael R. Young. *Geography:* Roy W. Brown. *Geology:* Martin D. Brasier, Ieuan D. Ellis-Gruffydd, Philip E. R. Lovelock, Fazli Y. Oktay, Sally S. Radford, Selcuk Tokel, Peter Wigley, Yucel Yilmaz. *Mathematics:* John D. Kelly. *Pharmacology:* Derek A. Terrar, Margaret R. Vickers. *Physics:* Tofig Azemoon, Timothy A. Broome, Paul G. Coleman, Jacqueline M. Gordon; Cedric L. Henderson, Myriam D. Hershkowitz, Christopher E. Miller, Clive F. Rogers, Peter J. Storey, †Serge Volonte, §David J. Willins, Yao Te Hai. *Psychology:* George D. Gaskell, David W. Green, Patrick C. Humphreys, Donald C. Mitchell, Ian O. M. Morin, Elizabeth J. Peill, John A. Short. *Physiology:* Graham S. Bailey, Keith I. W. Floyd, Stephen J. Walter. *Zoology and Comparative Anatomy:* John L. Mason, Osualdo A. Reig, John R. Rhodes, §Dale L. Ross, Jeffrey G. Williams. [89]

M.Phil. *Anthropology:* Geoffrey P. Hunt, Frances E. C. Morphy, Howard Morphy, Barrie J. Sharpe, Antony P. Stevens, Megan E. Watts. *Chemistry:* David G. Crabbe, Ivan J. Russell. *Physics:* Terence J. Fountain. [9]

M.Sc. (Old Regs.) *History and Philosophy of Science:* David M. M. Steele. [1]

M.Sc. (New Regs.) *Architecture:* Jaffar Agha Jaffar, Anthony J. Banks, Pierre Beaupre, Linda M. Clarke, Ian P. Gibson, Steven J. Groak, Keith C. Hodgson, Mary-Jean Hunter, Simon S. Kaplinsky, Romill M. Kesian, Kristan M. S. Livingston, Sonja Ljubicic-Prodanovic, Ayoub I. M. Oghanna, Mustafa A. Orguner, Luis C. Palacios Juliac, Ulrich K. Schöpke, Judith Ryser-Hartenbach, Sergio Puente Aguilar, John Pickles, Richard Shepley, Marta Vallmitjana Alamany, Maurice J. Wratten. *Biochemical Engineering:* Jila Fazel-Madjlessi, Ana C. A. Lages, Stephen K. Layokun, Mahendra B. Patel, Stephen L. Marshall, Peck G. Soh. *Biochemistry:* Maxwell W. Adlard, Charles Crowley, Caroline S. R. Hammond, Isis Landaeta, Alka R. Malwade, Helen K. Neufeld, Roger K. A. M. Skinner. *Conservation:* David J.

†Also registered at another Institution. §Awarded in 1972-73 but not listed in the Annual Report for that year.

Alexander, Charles A. M. Attwell, Oya Balamir, Susan E. Carter, Terence H. Gaussen, Philip J. Glyn, Carys A. Jones, Glen D. Kaufman, Christine Mallett, Euan C. McPhee, *Robin A. Pellew, Christopher L. Scott. *Educational Psychology:* Carole A. Billings, Robert J. Cameron, Pamela Harborth, Alan C. Heath, Tham O.-C. J. Lee, John H. Mathieson, John McConalogue, Caroline M. Shott, Rosalind M. Tucker. *History and Philosophy of Science:* Gladys D. Neville. *Hydrogeology:* Brian Adams, Riadh H. Al-Dabbagh, David M. Ball, Kem Chantara, Lloyd A. Donaldson, Yousif E. A. El-Safie, David Izatt, Richard S. King, Ali H. Mohanna, Ezejiofor M. Offodile, John L. Petrie, Roger D. Robert. *Micropalaeontology:* Anthony M. Evans, Paul R. Marshall, Kenneth J. Rutherford. *Physiology:* Samuel K. Banyikidde, Diana Bridge, Carlos Calderon Figueroa, Paul A. Fraser, Alan K. Sher, Ronald S. Sher, Keith A. B. Stoll, Jonathan Ateebirenyamuhangaowanshaho, Christopher J. Brooks, Geresom D. Wagaine-Twabwe. *Statistics:* Michael I. Nimmo-Smith. *Vertebrate Palaeontology:* Adrian J. Desmond. [84]

FACULTY OF ENGINEERING

Ph.D. *Chemical:* Noor M. Abdul Gaffar, Ang Ha Ming, §Jean A. P. Constans, Rodger J. Davey, Trevor J. Evans, Peter R. Foster, Robert D. Handscombe, Alan G. Jones, John C. Middleton. *Civil & Municipal:* Dennis E. Blumenfeld, Syed N. M. Din, Keith J. Eaton, §Mohammad Z. U. Khan, Nara Kholomnamool, Anthony B. Phillips, John A. Searle, Michael J. Semmens. *Electronic & Electrical:* Zaid M. Abdul Hadi, Abdul-Haq A.-J. Al-Ani, †Michael E. Cleverley, Oliver R. Hinton, Hugh J. A. La Rivière, Dimitrios Markopoulos, Padmanabha Nagenthiram, Oguz Ozkan, †Michael O. Toll, David A. Vincent. *Mechanical:* Alan Chitty, Graeme M. C. Lee, Vinod Sharma. *Photogrammetry and Surveying:* Ahmed F. E.-S. M. A. El-Sheikh, Muhammad S. Bhatti. [32]

M.Sc. *Biochemical Engineering:* Geoffrey M. Black, *Hendrik M. Geysen, Geoffrey J. Grantham, Michael J. Harvey, Thiamyos Kupasrimonkol, Brian A. Leech, Nishikant P. Shirsat, *Richard J. Stephenson, *Ergonomics:* Trevor H. Penniall, Robert D. Ray. *Microwaves & Quantum Electronics:* Adebayo, D. Akinde, Dhiraj Bhagat, Regis E. Camille, Clifton A. Campbell, Ravinder K. Dua, David Friend, Ghan S. Gupta, David B. Matthews, Geoffrey H. Moss, Emmanuel Papadofrangakis, Madiha S. A. E. F. Sabri, Mohammad Shahidi Hamedani, Jeyan Sithambaram, Syed A. A. Zaidi. *Naval Architecture:* Mohammad Abbas, George J. Argyros, Michael A. Clarke, Anthony C. D. Crow, Anthony D. Gill, Adrian P. A. Hawes, Donald J. Hussey, Panajotis Laskaridis, David A. Pattison, David Wilson, John B. Wynne. *Surveying:* William F. Price. [36]

FACULTY OF MEDICINE

Ph.D. *Zoology and Comparative Anatomy:* Sheila J. Jones. [1]

†Also registered at another Institution. §Awarded 1972-73 but not listed in the Annual Report for that year. *Awarded a mark of distinction.

APPENDIX XI

COLLEGE DIPLOMA AND CERTIFICATE AWARDS

1 OCTOBER 1972—30 SEPTEMBER 1973

FACULTY OF ARTS

Diploma in English Linguistic Studies: Sadik Berisha. [1]

Diploma in Film Studies: Sara Ann Jolly; Christopher Alan Justinian Rodrigues; Anthony John Tipping; Martin Robert Walsh. [4]

Diploma in Library and Information Studies: Francoise Elizabeth Kendrick Barnard; Nellie Brennen; Rosemary Jean Brown; Rosemary Noreen Lawrence Chasseaud; Margaret Anne Cookes; Michael Frank Cunningham; Margaret Ann Dawson; *Elizabeth Doktor; Elizabeth Jane Emberson; *Anthea Clare Forbes; John Freeman; John Frederick Fuggles; Linda Anne Goodman; Michael John Greenhalgh; Matara Arachchillaya Gunapala; Courtney Stuart Hennabuss; Mary Margaret Hanton; Hilary Faith Harland; Boleshaw Haronski; *Sybil Catherine Haworth; Linda Mary Hayes; Linda Christine Lagden; Vasanth Kumar Lazarus; Lesley Anne Ljungdahl; Edward Hugh Morgan; *Susan Morrell; Madeline Munro; Felicity Gay Radford; Mary Anne Rudland; Flora Anne Schofield; Gillian Frances Skidmore; Jennifer Stiff; Sheila Muriel Strongman; Geraldine Anne Swann; Lauretta Joan Taylor; Susan Jennifer Thackray; Jean Elaine Vaughan; Geoffrey Henry Walker; Richard Jenkyn Walters; James Ward; Brian James Winkle. [41]

Certificate of Proficiency in Phonetics: Conceicao Apparecida Absy; Margaret Somervaile Allan; Jeremy Edward Bale; Janne Christa Charlotte Bender; Maria Rosa Blanch; Noelle Brick; Pamela Victoria Cecil; Norma Chavarro; Mary Elizabeth Coleman; Catherine Connolly; Frances Connor; Dino Corbelli; Pierre Davi; Lucia Eugenia Di Trolio; Beverley Anne Dobbs; Dominique Jose Marie Duchene; Clare Susan Fletcher; Joanna Mary Fortnam; Carmen Galbis; Catherine Janine Francoise Giacomoni; Joyce Rosemary Gorham; Diana Harrington; Jacqueline Harris; Carola Gabriele Hatzel; Gerlinde Jeitler; John Arthur Maidment; Timothy Brian Malyon; Heather Gwynne Maxwell; Katherine Mickey; Margaret Elizabeth Morgan; Yasuko Ogamino; Alec Joshua Cosmo Pongweni; Jean Mary Robinson; Gaston Saint-Pierre; Charles Kikuo Sakow; Malti Saxena; Roselyne Lucile Gabrielle Schwartzmann; Lizandro Ernestino Torres Veliz; Jane Elizabeth Trotter; Nobuko-Umezewa; Elisabeth Veillon; Jill Marion Welfare. [42]

*Awarded with Distinction.

FACULTY OF SCIENCE

Diploma in Conservation: David James Alexander; Charles Anthony Mallory Attwell; Oya Balamir; Susan Elizabeth Carter; Terence Hardy Gaussen; Philip John Glyn; Carys Anne Jones; Glen Doran Kaufman; Christine Mallett; Euan Cuthbertson McPhee; Robin Anthony Pellew; Christopher Luke Scott; Bimbandha Vasuvat. [13]

Diploma in Hydrogeology: Brian Adams; Riadh Hamid Al-Dabbagh; David Martin Ball; Kem Chantara; Achmad Djaeni; Lloyd Ashley Donaldson; Salah Eldin Sid Ahmad A/Rahman Elnatiq; Yousif El Amin El Safie; David Izatt; Richard Seymour King; Ali Hassan Mohanna; Ezejiofor Matthew Offodile; John Lee Petrie; Roger Dean Robert. [14]

Diploma in Hydrogeology: Brian Aadms; Riadh Hamid Al-Dabbagh; David Evans; Paul Robert Marshall; Kenneth John Rutherford; Khagendra Nath Sarmah. [5]

Diploma in Space Science: Tajaddin Bani-Hashem; Alan David Farmer; Jaspal Singh Hayhre; Abdel Moneim Abdel Rahman Ibrahim; Robin John Laurance; Paul Frederick Kaskiewicz; Kenneth Frank Tapping. [7]

Diploma in Statistics: Grace Olabisi Archer; Faith Mary Banfield; Chiang Tin Joe; Mark Drukker; Alexandre Rudolphe Hiby; Margaret Ursula Jones; Ekaterini Kramvi; Jennifer Mary Milward; *Gregory John Owen Phillpotts; Savvas Polydorou; Maria Fernanda Ramalhoto Branco. [11]

FACULTY OF ENGINEERING

Diploma in Biochemical Engineering: Geoffrey Malcolm Black; Jila Fazel-Madjlessi; Hendrik Mario Geysen; Geoffrey John Grantham; Michael John Harvey; Thiamyos Kupasrimonkol; Ana Christina Argolo Lages; Stephen Kolawole Layokum; Brian Anthony Leech; Stephen Lawton Marshall; Mahendra Bhailalbhai Patel; Nishikant Parshuram Shirsat; Peck Geok Soh; Richard John Stephenson; Geoffrey Stafford Thomas. [15]

Diploma in Chemical Engineering: Colin Geoffrey Fincham. [1]

Diploma in Microwave Engineering: Adebayo Dada Akinde; Salman Rashid Al-Lami; Miles Edward Butcher; Regis Edwin Camille; Clifton Ashman Campbell; Adrian Caple; Bruce John Dansie; David Friend; Ghan Shyam Gupta; David Bryn Matthews; Geoffrey Howard Moss; Thelikada Nanayakkara Wasam Moran Thuduwage Somapala Nanayakkara; Emmanuel Papadofrangakis; Madiha Sabri Abd El Fatah Sabri; Syed Anis Abbas Zaidi. [15]

Diploma in Naval Architecture: Mohammad Abbas; George John Argyros; Michael Alan Clarke; Anthony David Gill; Adrian Philip Ashley Hawes; Donald John Hussey; Panajotis Laskaridis; David Anthony Pattison; David Wilson; John Benjamin Wynne. [10]

Diploma in Photogrammetry: Lynn Charles Holstein; Clement James Mitchell; Sydney Bruce Montgomery; Michael Arthur Neale; Paul Robert Trovillo Newby; William Anthony Joseph O'Connell. [6]

Diploma in Surveying: Philip Charles Challinor; Folorunso Folowosele; David Hill; Dennis Arthur Hill; John Reid Parker; Aderibighe Akanni Taiwo; Jonathan Lancelot William Walton; Jeffery Edwin Woodhams. [8]

*Awarded with Distinction.

FACULTY OF ENVIRONMENTAL STUDIES

Diploma in Architecture: Andrew Russell Anderson; Andrew Leach Bain; Jane Anne Bartholomew; John Andrew Bretherton; Timothy James Clark; John Duane; Derek John Dunlop; Peter Dunstan; Malcolm John Elliott; Steven John Groak; Robin John Harvey; Peter Jackson; Robert Stanley King; Michael McCafferty; Francis James Machin; Richard Peter Nissen; Mustafa Adil Orguner; Christopher Ronald Parker; Don Franciscuge Lipton Milroy Perera; Anthony David Pilling; Robert William Platts; Peter Mark Rankin; Kinga Maria Margaret Sczaniecka; John Michael Seifert; Jeremy Smith; Mervyn James Spragg; Ian Fred Stevens; Chandrakant Gokaldas Suchak; Richard Meredith Swann; Tan Jiew Cheng; John Douglas Tracey-White; Andrew Stephen Urwin; Pelawasige Bruno Joseph Dudley Waas; Anne Brenda Petty Warren; Graham Waterhouse. [35]

Diploma in Development Planning: Clarence Reginald Ademu-John; Mohamed Aly Mohamed Ahmed; Ramawatar Prasad Agrawal; Ricardo Alonso Del Valle; Franz Beer Chaverri; Victor Cañas Collada; Chhim Sun Fong; Tofazzal Hossain Chowdhury; Manuel Contijoch Escontria; Janis Cortez Cinani; Nasser Ali Faili; Mary Kathleen Fallon; Angel Fernández de Alba; Gonzalo Fernandez Montagne; Hong Houl; Khuon Khun Neay; Charles M. Kiguli; Kry-Beng-Hong; Cristina Maria de Faria Rocha Leiria; Margarete Maier; Moustafa Mahmoud Marei; Marcos Carvalheira de Mendonca; Chitta Mohan Ranga; Mohd. Hussaini bin Abdul Jamil; Alaa Nour El-din Nasser; Iraj Niamir; Tamrongsuk Pananond; Vera Lucia Dominguez Pastorelo; Ardeshir Shavak Patell; Amphon Pitanilabutra; Prafulla Man Singh Pradhan; Francisco José Javier Prieto Muñoz; Shukri Raja Samber; Suhas Radhakrishna Shanbhag; Tan-Thanh; Demirali Türközü; Cecilia Rosa Ugalde; Alberto Manuel Walker Lopez; Samuel Agyekum Winful; Christine Muñoz Yadao. [40]

Certificate in Urban Development Planning: Maria J. R. Albano; M. K. Bose; I. U. Davis; D. Djoekardi; H. A. Esquivel; F. J. Gichaga; G. A. Hagmueller; M. S. E-D. A. Hegab; R. S. Henein; S. Kodijat; H. Lemu; S. A. Lingawi; A. Niakamal; S. M. N. Rionge; M. Rosli. [15]

APPENDIX XII

SCHOLARSHIPS, STUDENTSHIPS, AND PRIZES

COLLEGE AND UNIVERSITY AWARDS

COLLEGE AWARDS

Anatomy Prizes.—Medical: M. H. Oliver.

Charlotte Ashby Prize (Laws).—G. Morris.

Herbert Batsford Prize (Architecture).—H. G. Richardson.

Thomas Witherden Batt Scholarships (Science).—K. A. Roberts, J. P. Normington, N. J. Fortey, J. K. Jackson, S. D. Pepper, S. B. Neoh, A. G. Dore.

Leonard Bayliss Memorial Prize (Physiology).—Patricia Skacel.

Bayliss-Starling Memorial Scholarship (Physiology and Biochemistry).—M. J. N. McDonagh.

Barlow Prize (Electronic & Electrical Engineering).—Z. Abdul-Hadi, S. Nokes, H. K. Wickramasinghe, prize equally divided.

Francis Perch Bedford Prize (Zoology).—C. A. Slaughter.

Bonney Prize (Geology).—S. R. Carter.

R. E. Bradbury Memorial Prize (Anthropology).—Clare Fulton.

Broderick-Parry Prize (Geography).—Patricia J. Morgan.

Ada Heather Bigg Prize (Economics).—E. J. Hutchinson.

Boise Scholarships (Slade).—Chowdhury P. Gopal, L. Hellyer, Everilda Berry, I. Biggs, D. Westby, G. Day.

Carey Foster Research Prize (Physics).—Helen E. Mason and A. R. Pickering, prize equally divided.

The Chadwick Medal and Prize (Civil Engineering).—D. N. Wheeler.

Churchill-Jenkinson Prize (Archive Administration).—J. C. Morgan.

Clinton Prize (Electrical Engineering).—D. N. Pim.

Lilian Clarke Prize (Botany).—E. V. J. Tanner.

Cowley Prizes (Librarianship and Archive Administration).—R. G. C. Desmond, R. O. Linden.

Cluff Memorial Prize (Medical).—M. H. Oliver.

Donaldson Medal (Architecture).—Anna M. Kosicka.

Early English Text Society's Prize.—O. M. Stone.

Elliot-Blake Studentship (Science).—Patricia C. Anderson.

Esso Chemical Travelling Scholarship (Chemical Engineering).—M. R. Atademir.

Sir Banister Fletcher Prize and Medal (Architecture).—A. Anderson.

Foreign Student Scholarship in Arts.—A. Bulow-Jacobsen.

Stephen Glanville Memorial Scholarship (Egyptology).—P. V. Johnson.

Edith Goodyear Prize (Geology).—A. M. Boast.

Paul Haas Studentship (Science).—Patricia C. Anderson, H. H. Osborne.

Hart Prizes (Photogrammetry and Surveying).—J. E. Woodhams, P. R. T. Newby.

Archibald P. Head Memorial Medal and Prize (Mechanical Engineering).—J. F. P. Eddison.

Heimann Medal (German).—J. E. Harrison.

T. G. Hill Scholarship (Botany).—K. A. Roberts.

Elsie Hitchcock Prize (English).—J. Henzell-Thomas.

John Oliver Hobbes Memorial Scholarship (English).—R. Todd.

Hotine Exhibition (Surveying).—S. B. Montgomery.

R. B. Hounsfield Scholarship in Traffic Engineering.—T. P. Hutchinson.

R. B. Hounsfield Prize in Town Planning and Civic Engineering.—J. Baster, J. F. Wright, prize equally divided.

Hurst Prize in English Law.—Helen Mattson.

Institution of Civil Engineers' Prize.—R. D. Allen.

Institution of Electrical Engineers' Prize.—F. A. Westall.

Institution of Mechanical Engineers' Prize.—D. N. Pattison.

Jackson Lewis Scholarships.—L. C. F. Lam Tin Cheung, M. Nash.

Sir Hilary Jenkinson Scholarships in Archive Administration.—J. G. Higginson.

Daniel Jones Memorial Scholarship (Phonetics).—Jean M. Robinson.

Ker Memorial Prize (English).—R. H. Mace.

Kitson Prize (Chemical Engineering).—J. J. Caldwell.

Librarianship and Archives Exhibitions—Susan J. Fitchie, Norah E. Gatland.

Sir John MacAllister Medal and Prize (Librarianship).—Norah E. Orna, Anthea C. Forbes, prize equally divided.

Sir William Meyer Prize (Geography).—Rhona V. Sheppard, Fiona A. Gray, prize equally divided.

Sir William Meyer Travelling Studentships (History).—J. A. Condon, Gillian D. Dwyer, F. A. Magnus, P. J. Morgan, S. A. Onger, A. J. Partington, R. T. Sims.

Sir William Meyer Essay Prize (Geography).—G. Heslop.

Momber Scholarship in Physics.—P. A. Roberts.

Momber Scholarship in Science.—P. Bishop.

Rosa Morison Scholarship in English Language and Literature.—Patricia J. Hubble.

Rosa Morison Postgraduate Scholarship in Arts.—M. H. Peake, R. K. Todd, C. J. Bradey.

Morley Medal (Modern English Literature).—Jacqueline Garrett.

Margaret Murray Prize in Egyptology.—Elizabeth F. Thorington.

Morris Prize (Geology).—M. E. Jones.

Owings Travelling Scholarship (Environmental Studies).—J. Baster.

Physiology Prizes.—Medical: M. H. Oliver.

Platt Prizes (Greek).—L. T. Gregory, Anne Harding.

Quain Studentship in Biology.—Phillipa J. Talmud.

L. M. Rothschild Scholarships in French.—P. S. Barrows, D. J. Hartley.

Sharpey Physiological Scholarship.—M. Kretzschmar.

Hugh Smith Memorial Prize (English).—Joy Hubble.

Stevenson Prize (Applied Mathematics).—R. A. Rigby.

Suckling Memorial Prize (Practical Anatomy).—Cecilia M. Robertson.

Sir Andrew Taylor Prize in Architecture.—P. Jackson.

Taylor Woodrow Travelling Scholarship (Civil Engineering).—N. C. Holladay.

Troughton Scholarships.—Jill E. Dimmock, M. Nash, R. J. Dimond, E. Idowu.

Tuffnell Scholarships (Chemistry).—G. P. Harper, G. J. Hutchings.

L. F. Vernon-Harcourt Prize (Civil Engineering).—E. H. Greenhalf.

Worshipful Company of Pewterers Postgraduate Studentship in London History.—Vivien Elliott.

FACULTY MEDALS AND PRIZES

Laws: Andrews Medal and Prize.—Melinda Collins.

Science Medal and Prize.—G. R. Burton.

Engineering: Goldsmid Medal and Prize.—A. P. Yogaathan.

Medical Sciences Medal and Prize.—Patricia O. Skacel.

Environmental Studies Medal and Prize.—Elaine A. Burrows.

SESSIONAL PRIZES

Anthropology: Rosa Morison Prize.—Jill Mortimer and N. F. W. Blatchley, prize equally divided.

English: Campbell Clarke Scholarships.—(1) K. H. Ahier and R. H. Mace, prize equally divided. (2) Caroline Dakers and R. A. D. Brennan, prize equally divided.

West Scholarship.—Diane C. Macdonell.

Geography: College Prize.—P. Knott. *Maconochie Prize.*—M. P. Tight. *1903 Prize.*—Christina Boylan and Helen M. Cooke, prize equally divided.

German: Robertson Prize.—Ruth Ranson. *Willoughby Prize.*—Karen Marek.

Greek: Long Prize.—Rosalind Hepplewhite.

Latin: Key Prize.—R. C. Dodsworth.

Laws: Andrews Prizes.— (1) Catherine Head. (2) Susan Kahan. (3) M. Copestake. (4) S. Gill. (5) C. Thompson.

Philosophy: Dawes Hicks Scholarships.—(1) Felicity R. Frank. (2) Beryl I. Swincoe and Jacqueline S. Barrett-Williams, prize equally divided.

Political Economy: Hume-Lloyd Scholarships.—(1) N. J. V. Morris. (2) P. S. Murphy. (3) N. D. Briggs and J. M. Reid, prize equally divided.

Scandinavian Studies: Rosa Morison Prize.—Deborah A. Bragan and Sara Davidson, prize equally divided.

Astronomy: Huggins Prize.—S. A. Briggs.

Architecture: Bartlett Prizes.—(1) N. Lucey. (2) S. H. Child.

Biochemistry: Jack Drummond Prize.—Rosemary E. Gale. *Plimmer Prize:*—S. J. Nawrat.

Botany: Darwin Prize.—Marilyn E. A. Horner. *Robert Hooke Prize.*—Pauline A. Trotter.

Chemistry: C. K. Ingold Prizes.—(1) R. B. Foster. (2) J. A. Robinson. (3) R. Gosling and M. Upton, prize equally divided.

Geology: Chubb Prize.—P. S. Shaw and S. J. Malcolm, prize equally divided.

Mathematics: Filon Prize.—Arpita Datta. *Hill Prize.*—R. H. K. Thomas. *Jeffrey Prize.*—R. H. H. Batty.

Physics: Wlliam Bragg Prize.—R. Lowndes. *Oliver Lodge Prize.*—P. J. Dimbylow and T. R. Twomey, prize equally divided. *Wood Prize:* M. J. Harris.

Physiology: Foster Prize.—B. Ahmed. *Sanderson Prize.*—P. R. Weeks.

Psychology: McDougall Prize.—C. H. Sharpe. *Spearman Prize.*—P. H. Richardson.

Statistics: Egon Pearson Prize.—E. Rumbold. *Karl Pearson Prize.*—J. J. Church, D. J. Guest and M. J. MacDonald, prize equally divided.

Zoology: (1) W. A. Taylor. (2) J. T. Tite.

Chemical Engineering: Goldsmid Prizes.—(1) P. G. Marden. (2) J. N. Bond.

Civil and Municipal Engineering: Goldsmid Prizes.—(1) D. A. Andreou. (2) L. C. F. Lam Tin Cheung.

Electronic and Electrical Engineering: Goldsmid Prizes.—(1) D. L. Harrison. (2) C. P. Norton.

Mechanical Engineering: Goldsmid Prizes.—(1) R. W. Mandeville. (2) M. P. Constantinou.

Medical Course—Part I: Anatomy Prize.—A. S. Luder. *Biochemistry Prize.*—A. S. Luder. *Physiology Prize.*—Elizabeth M. Price. *Best Aggregate Performance Prize.*—A. S. Luder.

Dental Course: Anatomy Prize.—B. D. Franks. *Physiology Prize.*—Hermione J. Phillips.

UNIVERSITY AWARDS

UNIVERSITY POSTGRADUATE (FINALS) STUDENTSHIPS

Civil Engineering: C. P. Ellinas. *Psycholinguistics:* R. S. Kirby.

UNIVERSITY POSTGRADUATE STUDENTSHIPS

Electrical Engineering: H. K. Wickramasinghe (3rd year). Ghee Ann Teh (3rd year).

English: Gillian M. Dunphy (2nd year). Sylvia Sklar (3rd year). *French:* Felicity A. Hill, D. Macey. *History:* Celia Henson (2nd year). *Mechanical Engineering:* Kok Swee Sieh (2nd year). *Philosophy:* S. O. Dermen, W. L. Marshall, Freya Mathews (2nd year). *Planning Studies:* O. Hassel. *Physics:* P. Popacosta.

APPENDIX XIII

BENEFACTIONS, DONATIONS, RESEARCH GRANTS AND CONTRACTS

The College Committee makes grateful acknowledgement of the following:

Allen and Hanburys Limited

£1,228 for the Department of Pharmacology in support of research on drug allergy.

Architects' Registration Council of the United Kingdom

£5,315 for the School of Environmental Studies for the study of the relationship between architectural education and the profession.

The Arthritis and Rheumatism Council

£4,725 for research in the Department of Physiology on naturally occurring anti-inflammatory agents.

Asthma Research Council

£600 for the Department of Pharmacology for an investigation of antigens.

The Hon. David Astor

A gift of about £185,000 to endow and support the Freud Memorial Visiting Professorship in Psychoanalysis and to promote the study and critical examination of psychoanalysis, including its theoretical aspects and its cultural implications.

Emeritus Professor and Mrs H. E. M. Barlow

A gift of £2,000 to provide a fund for an annual prize, to be known as the 'Barlow Prize', to be awarded to a graduate student for the most original contribution to research in the field of Electronic and Electrical Engineering.

Emeritus Professor H. Hale Bellot (the late)

A further sum of £1,920.28, under the bequest of the late Professor Bellot, which is being used for the benefit of the American History library and to assist graduate students and younger members of the staff of the History Department to pursue research in the United States or in any other part of the western hemisphere.

C. H. Boehringer Sohn

£2,463 for the Department of Pharmacology in support of research on drug allergy.

The British Academy

(1) £6,200 for work in the Department of Greek on unpublished Oxyrhynchus Papyri.

(2) £3,000 for 1972-73 towards the cost of the production of a definitive edition of the works of Jeremy Bentham.

British Heart Foundation

(1) £6,750 for research in the Department of Biophysics on calcium and organic anion movements in heart muscle cells and mitochondria.

(2) £5,192 and £2,599 for research in the Department of Physiology on the effects of inotropic interventions on cardiac muscle.

Bush Boake Allen Limited

£2,790 for a research studentship in the Department of Chemistry.

Calouste Gulbenkian Foundation, Lisbon

£416 for the Department of English Language and Literature in support of a survey of English usage.

Canadian Department of Supply and Services

£6,970 for research in the School of Environmental Studies on the development programme related to tele-conference systems.

Cancer Research Campaign

(1) £5,609 for research in the Department of Anatomy and Embryology on the *in vitro* determination and differentiation of SIKR.

(2) £10,185 and £512 for research in the Department of Biochemistry on the effects of aflatoxins and other carcinogens on membrane polysome interactions *in vivo* and *in vitro*.

£3,859 for research in the Department of Human Genetics and Biometry on the effect of chemicals on mitotic cycle times and rates of cell proliferation.

(4) £6,021, £1,312 and £426 for research in the Department of Pharmacology on tumour immunology.

Centre for Environmental Studies

£9,200 for the School of Environmental Studies for a study of the inter-war suburbs.

Dr L. J. Chubb (the late)

A bequest of £500 under the will of the late Dr L. J. Chubb, student of the College, 1919-23, and member of staff of the Department of Geology, 1925-50, to provide a fund for the award of an annual prize to the student showing outstanding ability in the field of geology.

Civil Service Department

£10,576 for the School of Environmental Studies for telecommunications field trials.

Contractors John Brown Limited

A donation of £1,250 to the Mark Guter Memorial Fund in memory of the late Professor Mark Guter, Professor of Chemical Engineering, 1971-72 (£1,000 from Contractors John Brown Ltd and £250 from his friends and colleagues in the C.J.B. Group of companies). The fund will be used for the benefit of the Library.

Miss Ethel C. L. Cooper (the late)

A pecuniary legacy of £100 under the will of the late Miss Ethel C. L. Cooper, student Faculty of Arts (Classics), 1908-12, to be used in such manner as the College Committee may determine.

Cystic Fibrosis Research Trust

£1,449 for an investigation in the Department of Physiology of cystic fibrosis using model systems in animals.

Department of Education and Science

(1) £4,200 for the School of Environmental Studies for a study of the educational building consortia.

(2) £2,100 for the School of Environmental Studies for an operational research study of document delivery service in hierarchical library systems.

Department of Education and Science (Office for Scientific and Technical Information)

£3,810 for the School of Library, Archive, and Information Studies for an evaluation of SDI services based on Compendex.

Department of the Environment

(1) £12,635 and £3,400 for the Department of Civil and Municipal Engineering for a study of the second Stevenage bus demonstration project.

(2) £3,562 for research in the Department of Civil and Municipal Engineering on the effect of knee impact area design on road accident injuries.

(3) £7,305 in support of a Readership in Construction Economics in the School of Environmental Studies in connection with a programme of research on economic and operational aspects of the building process.

(4) £992 and £538 for the School of Environmental Studies for a summary of the results of the building timetable study.

(5) £500 for the School of Environmental Studies for the preparation of a conference paper for the United Nations seminar on new towns.

(6) £4,600 for an investigation in the Department of Political Economy into the socio-economic viability of rural settlements.

Department of the Environment (Transport and Road Research Laboratory)

(1) £15,308 for research in the Department of Civil and Municipal Engineering on the movement of cars and their occupants in accidents.

(2) £5,133 for research in the Department of Civil and Municipal

Engineering on the loss of control and the relation between accident rates and handling characteristics for cars.

(3) £2,774, £89 and £86 for the Department of Civil and Municipal Engineering for a study of traffic intensity in urban areas.

Department of Health and Social Security

(1) £670 for the Department of Mechanical Engineering for the development of a prototype hydraulically-powered artificial arm.

(2) £100 for research in the Department of Mechanical Engineering on pneumatic position control servomechanisms for arm prostheses.

(3) £3,000 for the Department of Phonetics and Linguistics, St Thomas's Hospital, and Nuffield Hearing and Speech Centre for the construction and supply of laryngographs and associated equipment used in laryngographical techniques and speech disorders.

Department of Trade and Industry

(1) £1,071 for research in the Department of Chemical Engineering on particle mixing in gas fluidised beds.

(2) £2,949 for research in the Department of Geography on the abatement of pollution by direct methods.

(3) £7,065 and £374 for research in the Department of Mechanical Engineering on yaw and roll control of surface ships.

Department of Transportation (U.S.A.)

£5,500 for the School of Environmental Studies for a report on telecommunications/transportation substitution.

The Diamond Corporation

£2,000 for the Department of Chemistry for research on diamonds.

European Training Program in Brain and Behaviour Research

DM.2,500 for the Department of Anatomy and Embryology for the establishment of a working collaboration with the Institute of Neurophysiology, Copenhagen.

Foundations' Fund for Research in Psychiatry (U.S.A.)

$16,300 for a research fellowship in the Department of Anatomy and Embryology.

General Electric Company, U.S.A.

£2,000 for research in the School of Environmental Studies on communications systems.

Geoprosco Overseas Limited, *see* p. 147.

Gestetner Limited, *see* p. 157.

Godman Fund of the British Museum (Natural History)

£100 for the Department of Geology for expenses in connection with site workings on a Pleistocene fissure at Westbury, Somerset.

Greater London Council

£2,500 for the Department of Civil and Municipal Engineering for research in traffic studies.

The Gabriel Harrison Foundation

£28,000 for the School of Environmental Studies for a study of the response of people to stresses of the environment.

Huntings Technical Services Limited, *see below.*

Imperial Cancer Research Fund

£15,500 for the Department of Zoology and Comparative Anatomy for the assembly, installation, and housing of cobalt irradiation equipment.

Imperial Chemical Industries Limited

(1) A gift of apparatus to the value of £1,690 to the Department of Chemical Engineering.

(2) A gift of photogrammetric equipment, to the value of about £20,000, to the Department of Photogrammetry and Surveying.

Indian Statistical Institute, Huntings Technical Services Limited, and Geoprosco Overseas Limited

£100 for the Department of Geology for hydrogeological research in overseas countries.

International Computers Limited

£2,000 for the Department of Civil and Municipal Engineering for research in traffic studies.

International Council for Philosophy and Humanistic Studies

$1,600 for the Department of Greek for photographing Greek and Latin papyri in overseas libraries.

International Drivers Behaviour Research Association

£2,500 for the Department of Civil and Municipal Engineering for research in traffic studies

The Lalor Foundation

$5,600 for the Department of Human Genetics and Biometry for the detection of Mosaicism in relation to conception planning.

The Leverhulme Trust Fund

(1) £2,177 and £416 for the Department of English Language and Literature in support of a survey of English usage.

(2) £118 for the School of Environmental Studies for a quantitative assessment of visual intrusion and loss of visual amenity with special reference to urban motorways.

London Transport Executive

£4,000 for the Department of Psychology for research on the selection and training of railway guards.

Longman Group Limited

£21,000 for the Department of English Language and Literature in support of the Longman Research Fellowship in English Language.

Max-Planck-Institut für Ernahrungsphysiologie

£1,200 for research in the Department of Biochemistry on computer simulation of multi enzyme system.

Medical Research Council

(1) £25,019 for the Department of Anatomy and Embryology for the counting and measuring of microscopic images.

(2) £20,695 for research in the Department of Anatomy and Embryology on the immunohistochemistry of synapses in the mammalian central nervous system during post natal development.

(3) £5,916 for an investigation in the Department of Anatomy and Embryology of the role of gut in the induction of experimental allergic diseases.

(4) £2,500 for the Department of Anatomy and Embryology for a study of cell contacts and movements in explanted chick embryo by time-lapse cinemicrography.

(5) £2,435 for a study in the Department of Anatomy and Embryology of the factors controlling convergence on cells in the somaesthetic sensory system.

(6) £1,245 for a study in the Department of Anatomy and Embryology of the structure and function of coated and plain synaptic vesicles in the CNS.

(7) £448 for the Department of Anatomy and Embryology for a project for developing a quantitative method for detecting aggressive factors in lymphocytes and serum in experimental immune conditions.

(8) £23,543 for research in the Department of Biochemistry on the binding of polysomes to membranes of the endoplasmic reticulum.

(9) £12,584 for the Department of Biochemistry for the *in vitro* study of the synthesis and regulation of synthesis of ribosomal RNA in rat liver and a rat hepatoma cell line.

(10) £300 for research in the Department of Biochemistry on the structural and functional relationships amongst the DNA polymerases of mammalian cells.

(11) £8,870 for research in the Department of Biophysics on metabolic control by permeability and by enzyme adaptation.

(12) £8,161 for research in the Department of Biophysics on the time course of the action of digitalis glycosides on skeletal and heart muscle fibres.

(13) £360 for the Department of Biophysics for an analysis of the mechanisms regulating the contractile activity of the heart.

(14) £35,597 for research in the Department of Chemistry on the structure of drugs and small biological molecules including preferred and possible conformations of functional groups.

(15) £5,693 for research in the Department of Chemistry on the purification, crystallisation, properties and location of choline acetyltransferase.

(16) £400 for research in the Department of Chemistry on the conformation of molecules affecting nervous systems.

(17) £1,654 and £68 for the Department of Chemistry and University College Hospital Medical School for studies of pathological-type crystals.

(18) £7,783 for the Department of Civil and Municipal Engineering for the detection of viruses in water supplies.

(19) £17,407 for an investigation in the Department of Human Genetics and Biometry into the control of sex of the human zygote.

(20) £6,000 for a study in the Department of Human Genetics and Biometry of the genetic linkage and location of genes on human chromosomes.

(21) £3,195 for the Department of Human Genetics and Biometry for a theoretical investigation into genetic polymorphism.

(22) £10,505 for research in the Department of Pharmacology on the social influences of drug dependence in rodents.

(23) £9,450 for research in the Department of Pharmacology on the effect of various sympathomimetics.

(24) £7,693 for a study in the Department of Pharmacology of neurotransmission at synapses in the mammalian spinal cord.

(25) £5,183 for a study in the Department of Pharmacology of animal behaviour 'models' of manic-depressive illnesses: the role of lithium.

(26) £150 for the Department of Pharmacology for an analysis of drug dependence in rats.

(27) £7,218 for the Department of Physiology for calorimetric investigations of reactions involving muscle proteins.

(28) £1,228 and £346 for a study in the Department of Physiology of the development of the foetal blood brain barrier.

(29) £80 for research in the Department of Physiology on the energetics of muscular contraction.

(30) £8,242 and £9 for research in the Department of Physiology and St Thomas's Hospital Medical School on the placental transport of electrolytes.

(31) £11,217 for the Department of Physiology and University College Hospital for an investigation into the causes of intraventricular haemorrhage in the newborn.

(32) £20,586 for research in the Department of Zoology and Comparative Anatomy on the isolation and biological characterisation of murine RNA tumour envelope glycoproteins and of thyroglobulin sub-units.

(33) £650 for research in the Department of Zoology and Comparative Anatomy on immunology of the nervous systems.

(34) £350 for the Department of Zoology and Comparative Anatomy for an automated measurement of tissue changes in ageing.

(35) Research training support grants totalling £9,602.

Medical Research Council (Canada)

£604 for the expenses of a visiting scientist in the Department of Biochemistry.

Memorial Foundation for Jewish Culture (U.S.A.)

£22,000 in support of the Department of Hebrew and Jewish Studies.

Mental Health Trust and Research Fund

£12,046 for a study in the Department of Zoology and Comparative Anatomy of cell surface antigenic markers in the nervous system.

Meteorological Office

£810 for the Department of Physics and Astronomy for research on the upper atmosphere structure.

Ministry of Defence

(1) £803 for the Department of Biochemistry for biochemical studies on oxygen toxicity.

(2) £2,040 for research in the Department of Civil and Municipal Engineering on international design formulae for stress analysis of light-weight military structures.

(3) £19,890 for research in the Department of Electronic and Electrical Engineering on microwave circuit functions using acoustic surface waves.

(4) £12,885 for the Department of Electronic and Electrical Engineering for computer studies of semi-conductor devices.

(5) £7,227 for the Department of Electronic and Electrical Engineering for an investigation of the noise properties of high power avalanche diode amplifiers.

(6) £4,223 for research in the Department of Electronic and Electrical Engineering on whip antennas for vehicles.

(7) £2,060 for research in the Department of Mechanical Engineering on the design of submarine hull gratings.

Ministry of Defence (Navy)

(1) £673 for research in the Department of Mechanical Engineering into the dynamic responses of ship structures and systems.

(2) £393 for a study in the Department of Mechanical Engineering of fatigue crack growth under random loading.

(3) £5,178 and £4,017 for research in the Department of Photogrammetry and Surveying into the industrial use of photogrammetry as an aid to measurement of complex shapes.

Ministry of Defence (Procurement Executive)

(1) £3,424 and £588 for the Department of Electronic and Electrical Engineering for a feasibility study of acousto-optic display devices.

(2) £1,939 for research in the Department of Electronic and Electrical Engineering on phase shifters for L Band aircraft aerials.

(3) £1,025 for the Department of Mechanical Engineering for an assessment of the fragility of equipment and any associated effects on packaging techniques.

Mono Concrete Limited

£350 for an investigation in the Department of Civil and Municipal Engineering into the self cleansing characteristics of circular and flat bottomed pipes.

The Multiple Sclerosis Society

£726 for research in the Department of Anatomy and Embryology on the pathogenesis of experimental allergic neuritis and its relationship to clinical neuropathies and multiple sclerosis.

Muscular Dystrophy Associations of America Inc.

$1,000 for a fellowship supply allowance in the Department of Physiology.

National Economic Development Office

£3,100 for a study in the School of Environmental Studies of regional prospects for the construction industry.

National Research Development Corporation

£800 for research in the Department of Chemistry on the isolation of peptides from bee venom.

Natural Environment Research Council

(1) £6,861 for research in the Department of Chemistry on the geological and cosmological significance of radiation-damaged diamond and other minerals.

(2) £10,350 for the Department of Geology for geological and geophysical investigations of the Sierra Leone Rise.

(3) £1,000 for a study in the Department of Geology of oceanography and geology of selected areas in the Caribbean.

(4) £794 for the Department of Geology for an investigation of Pleistocene fissure-filling at Westbury, Somerset.

(5) £7,434 for an investigation in the Department of Mathematics of inertial waves and magnetohydrodynamics of the earth's core.

(6) £5,460 for the Department of Physics and Astronomy for geological mapping of the Casius Quadrangle of Mars.

(7) £4,000 for an investigation in the Department of Zoology and Comparative Anatomy of the origin and early history of the Mammalia.

(8) £554 for the Department of Zoology and Comparative Anatomy for a study of survival as a function of metabolism and social status in the Skomer Vole.

(9) Research training support grants totalling £6,495.

North Atlantic Treaty Organisation

£513.79 for research in the Department of Chemical Engineering on crystallization.

The Nuffield Foundation

(1) £7,174 for research in the Department of Biochemistry in the field of cellular enzymology.

(2) £1,280 for the Department of Psychology for the construction of a model of the child's conceptual world.

Overseas Development Administration

(1) £39,731 for the School of Environmental Studies to investigate planned urban growth in the developing countries, with particular reference to Zambia.

(2) £9,079 for the School of Environmental Studies for research on fringe service industries in Chandigarh, India.

Pharmacia (G.B.) Limited

£1,300 for the Department of Pharmacology in support of research in drug allergy.

The Population Council (U.S.A.)

$16,000 for research in the Department of Human Genetics and Biometry on the determination of sex.

Post Office Contracts Division

(1) £6,533 for a study in the Department of Electronic and Electrical Engineering of the problems associated with microwave bridge measurement of permittivity.

(2) £4,649 for the Department of Electronic and Electrical Engineering for a theoretical and experimental study of rectangular dielectric strip waveguides.

(3) £6,557 for the School of Environmental Studies for office communication surveys.

Rees Jeffreys Road Fund

£2,000 for the Department of Civil and Municipal Engineering for research in traffic studies.

Mrs Dorothy M. Reynolds

A gift of £300, bequeathed to Mrs Reynolds by the late Mr B. H. Nixon, to be known as the 'B. H. Nixon Fund', to the School of Environmental Studies in support of experiments in building with chalk.

Joseph Rowntree Charitable Trust

£296 in support of two lectureships in International Relations.

The Royal Society

(1) £2,514 for the Department of Geology for expenses in connection with an expedition to Eastern Taurus Tethyan Suture.

(2) £678 for the Department of Physics and Astronomy for geological investigations of the summit region of Mount Etna, Sicily.

(3) £5,425 for a research fellowship in the Department of Zoology and Comparative Anatomy.

The Salters' Company

£1,868 for a fellowship in the Department of Chemistry.

Science Research Council

(1) £8,155 for research in the Department of Anatomy and Embryology on the memory system of the octopus.

(2) £4,902 for research in the Department of Anatomy and Embryology on the activity of hippocampal units during spatial orientational and exploratory behaviour.

(3) £670 for the Department of Anatomy and Embryology for scanning electron microscopy of biological tissues.

(4) £272 for the Department of Anatomy and Embryology for scanning electron microscopy of animal tissue.

(5) £11,452 for research in the Department of Biochemistry on the control of enkaryotic gene expression: template-mediated controls governing haemoglobin MRNA synthesis.

(6) £10,498 for a study in the Department of Biochemistry of the enzymology and function of the nuclei of brain cells.

(7) £1,742 for a study in the Department of Biophysics of the synaptic function in the giant synapses of the squid.

(8) £8,467 for studies in the Department of Botany and Microbiology on the control of morphology and division in bacteria.

(9) £2,273 for a study in the Department of Botany and Microbiology of drug action on mitochondrial respiration and nucleic acid synthesis.

(10) £8,646 for research in the Department of Chemical Engineering on continuous fluidised bed conversion direct from solution to solid product.

(11) £3,423 for research in the Department of Chemical Engineering on the adsorption of sulphur dioxide in a gas-solid fluidised bed.

(12) £490 for research in the Department of Chemical Engineering on chemical reactions in fluidised beds.

(13) £7,716 for the Department of Chemistry for mechanistic studies of the enzyme aspartate amino-transferase.

(14) £7,716 for research in the Department of Chemistry on the effective acidity of lysozyme and other enzymes.

(15) £6,517 for research in the Department of Chemistry on homolytic organometallic reactions.

(16) £5,659 for a study in the Department of Chemistry of cycloadditions of allyl cations to conjugated dienes.

(17) £5,126 and £3,270 for the Department of Chemistry for microwave spectroscopy.

(18) £5,059 for a study in the Department of Chemistry of the theory of anharmonicity in molecular crystals.

(19) £4,910 for a study in the Department of Chemistry of the stability and reactivity of organomercury compounds under environmental conditions.

(20) £4,852 for a study in the Department of Chemistry of the factors affecting the growth and development of animal cells.

(21) £4,600 for an investigation in the Department of Chemistry of the character and reactions of carbon to transition metal σ bonds.

(22) £3,538 for research in the Department of Chemistry on electron beam scanning of metal surfaces.

(23) £2,768 for a study in the Department of Chemistry of the theory of photo-dimerisation and of fluorescence in defect inorganic solids.

(24) £2,734 for research in the Department of Chemistry on high resolution molecular spectroscopy.

(25) £1,762 for research in the Department of Chemistry on laser Raman spectroscopy.

(26) £900 for the Department of Chemistry for optical electron microscope studies of photochemical processes in organic crystals.

(27) £25 for the Department of Chemistry for expenses in connection with visits to Harwell to use neutron facilities.

(28) £7,128 for studies in the Departments of Chemistry and Physiology of the conformational stabilities of enzymes.

(29) £22,453 for research in the Department of Civil and Municipal Engineering on turbulence in separated flows and its effect on erodible sand beds.

(30) £11,537 for research in the Department of Civil and Municipal Engineering on the filter flocculation in water treatment.

(31) £8,340 and £1,700 for the Department of Civil and Municipal Engineering for field studies of flow characteristics in relation to sediment transport and flow resistance.

(32) £5,830 for research in the Department of Civil and Municipal Engineering on a general engineering theory of elastic buckling and post-buckling.

(33) £5,678 for the Department of Civil and Municipal Engineering for a development of the strip method of slab design (in the presence of point loads, point supports, and free edges).

(34) £12,317 for the Department of Electronic and Electrical Engineering for the preparation of controlled property dielectric films by RF sputtering.

(35) £8,327 for research in the Department of Electronic and Electrical Engineering on high resolution soft-X-ray lithography.

(36) £8,211 for research in the Department of Electronic and Electrical Engineering on a new approach to branching filters for digital communications at microwave frequencies.

(37) £2,600 for research in the Department of Electronic and Electrical Engineering on identity transponders.

(38) £2,451 for research in the Department of Electronic and Electrical Engineering on electromagnetic levitation of liquid metal: investigation by analogue technique.

(39) £992 for the Department of Electronic and Electrical Engineering for speech recognition apparatus.

(40) £15,047 for a study in the School of Environmental Studies of required lighting levels for difficult visual tasks.

(41) £10,039 and £610 for a study in the Development of Mathematics of inertial waves and magnetohydrodynamics of the earth's core.

(42) £4,236 for a senior visiting Fellowship in the Department of Mathematics.

(43) £3,026 for research in the Department of Mathematics on algebraic topology.

(44) £18,330 for the Department of Phonetics and Linguistics for a speech synthesis in terms of auditory patterns.

(45) £86,200 for a study in the Department of Physics and Astronomy of atmospheric structure and dynamics.

(46) £45,487 and £3,362 for the Department of Physics and Astronomy for the Bubble Chamber Group Programme, 1973-74.

(47) £29,978 and £18,007 for the Department of Physics and Astronomy for a balloon programme of infra-red astronomy.

(48) £24,049 for an investigation in the Department of Physics and Astronomy of parallel processing networks.

(49) £19,643 for research in the Department of Physics and Astronomy on the design, construction and observing applications of an AAT Mk I prototype multichannel spectrophotometer.

(50) £10,152 for research in the Department of Physics and Astronomy on the scattering of low energy positrons.

(51) £9,235 for the Department of Physics and Astronomy in support of participation in SAS–D and IUE Projects.

(52) £6,353 for a study in the Department of Physics and Astronomy of high energy hadrons and nuclear physics.

(53) £6,300 for research in the Department of Physics and Astronomy on inelastic scattering of electrons by lithium atoms.

(54) £2,916 for a study in the Department of Physics and Astronomy of new techniques for the calculation of atomic radiative transition probabilities.

(55) £2,242 for the Department of Physics and Astronomy for continued observation of Southern Hemisphere objects at 10 micron.

(56) £2,000 for the Department of Physics and Astronomy in support of the Optics Technology Discussion Meeting on X-ray.

(57) £1,746 for a study in the Department of Physics and Astronomy of relativistic corrections in atomic structure and atomic collision calculations.

(58) £1,700 for the Department of Physics and Astronomy for infra-red astronomical observations in the Southern Hemisphere.

(59) £1,662 and £1,322 for research in the Department of Physics and Astronomy on ground-based infra-red astronomy at Tenerife.

(60) £1,082 for research in the Department of Physics and Astronomy on molecular astrophysics.

(61) £475 for the Department of Physics and Astronomy for expenses in connection with attendance at Imaging Team Meeting in July 1972.

(62) £240 for a study in the Department of Physics and Astronomy of the infra-red spectra of planetary nebulae and Seyfert galaxies.

(63) £6,658 for the Department of Physics and Astronomy, under an agreement with the Rutherford High Energy Laboratory, for experiments to determine single particle momentum spectra on ISR.

(64) £6,620 for the Department of Physics and Astronomy, under an agreement with the Rutherford High Energy Laboratory, for a study of coherent production of nucleon isobars.

(65) £19,965 for the Department of Physics and Astronomy and the Institute of Astronomy, Cambridge, for high resolution ultraviolet interstellar and stellar observations from a balloon platform.

(66) £18,966 for research in the Department of Psychology on the information processing characteristics of performance in choice reactions.

(67) £5,096 and £151 for a study in the Department of Statistics and Computer Science of Bayesian methods in econometrics.

(68) Research training support grants totalling £29,555.

Shell U.K. Exploration and Production Limited

£3,000 for the Department of Geology for a palynological study of material.

Shell-Mex Limited

£3,000 for the Department of Civil and Municipal Engineering for research in traffic studies.

Social Science Research Council

(1) £4,282 for a study in the Department of Anthropology of the hunting and gathering economy as an elementary mode of production.

(2) £3,922 for the Department of Anthropology for an anthropological study of palaeolithic cave art.

(3) £2,633 for a study in the Department of Anthropology of economic anthropology—the effect of social monitoring on the elasticity of consumption with respect to changes in income.

(4) £9,373 for a study in the School of Environmental Studies of adaptation to distracting stimuli within the urban environment.

(5) £3,825 for the School of Environmental Studies for a pilot study of space, time and the disruption of family behaviour pattern in the metropolis.

(6) £4,000 for a study in the Department of Geography of the international trends in office location with particular reference to public costs.

(7) £7,434 for the Department of Geography and the University of Birmingham for the preparation of a glossary of Russian economic, social and geographical terms of the sixteenth and seventeenth centuries.

(8) £1,221 for research in the Department of History on the social structure of the ancient city.

(9) £3,713 for the School of Library, Archive and Information Studies for the preparation of a catalogue, calendar, and hand list of the archives of Karl Pearson.

(10) £3,999 for a study in the Department of Psychology of legibility criteria for the efficient use of maps.

(11) £8,465 for the Slade School of Fine Art for the Application of the Universal Decimal Classification Scheme to the Slade Film History Register.

(12) Research training support grants totalling £310.

John Stewart of Rannoch Fund
University of Cambridge

£1,500 for the Department of Greek for work on unpublished Oxryhynchus Papyri.

Mr Norman Swindon, *see below.*

Tin Research Institute

£900 for a research studentship in the Department of Chemistry.

The family of the late Dr A. J. V. Underwood, Mr Norman Swindin, and Gestetner Limited

A gift of £2,200 to provide a fund for the establishment of an exhibition in memory of the late Dr A. J. V. Underwood, Honorary Lecturer in the Department of Chemical Engineering, 1932–34, for award to a graduate student pursuing a course of study or research in the Department of Chemical Engineering for a higher degree.

United Kingdom Atomic Energy Authority

£1,640 for the Department of Physics and Astronomy for a detection and energy analysis of neutral atoms.

United States Air Force

(1) $9,000 for the Department of Physics and Astronomy for the determination of air density, temperature and winds at high altitude.

(2) $600 for the Department of Physics and Astronomy for interferometric measurements of absorption and refraction in the sub-millimetre range.

United States Public Health Service

(1) $21,113, $13,648, and $762, for research in the Department of Anatomy and Embryology on the sensory and motor aspects of respiration.

(2) $1,000 for a research fellowship supply allowance in the Department of Anatomy and Embryology.

(3) $917 for a fellowship supply allowance in the Department of Botany and Microbiology.

(4) $12,304 and $11,166 for the Department of Human Genetics and Biometry for a study of the growth and development of Melanesian children.

(5) $1,000 and $750 for research fellowship supply allowances in the Department of Human Genetics and Biometry.

(6) $1,000 for a fellowship supply allowance in the Department of Statistics and Computer Science.

(7) $1,000 for a fellowship supply allowance in the Department of Zoology and Comparative Anatomy.

Vauxhall Motors Limited

£2,000 for the Department of Civil and Municipal Engineering for research in traffic studies.

The Wallace Laboratories (U.S.A.)

£1,000 for the Department of Pharmacology in support of research in drug allergy.

The Wellcome Trust

(1) £5,264 for a study in the Department of Anatomy and Embryology of the biochemical basis for learning and memory in octopus.

(2) £4,901 for the Department of Anatomy and Embryology for combined pharmacological and electron microscopical studies of the innervation of the gut.

(3) £3,917 and £176 for an investigation in the Department of Anatomy and Embryology of synaptic structure by electron microscopy and fluorescence microscopy.

(4) £970 and £149 in support of Dr K. E. Webster's research in the Department of Anatomy and Embryology.

(5) £5,892 and £880 for research training scholarships in the Sub-Department of the History of Medicine in the Department of Anatomy and Embryology.

(6) £5,600 for a research fellowship in the Sub-Department of the History of Medicine in the Department of Anatomy and Embryology.

(7) £1,795, £451, and £144 for research in the Department of Animal Genetics on the role of antiteratogens in congenital deformities.

(8) £4,307 for a study in the Department of Biochemistry of the initiation of lactogenesis and the control of milk formation.

(9) £850 for a research training scholarship in the Department of Biochemistry.

(10) £1,750 for research in the Department of Biophysics on excitable membranes and nerve-muscle interaction.

(11) £188 for a research training scholarship in the Department of Biophysics.

(12) £2,073 for research in the Department of Chemistry on the structure and packing of membrane components.

(13) £585, £282 and £216 for the Department of Pharmacology in support of research on drug allergy.

(14) £1,812 and £115 for a study in the Department of Physiology of the mechanical properties of skeletal muscle.

The Helen Hay Whitney Foundation Incorporated

$1,000 for laboratory expenses in the Department of Biophysics.

Mr T. L. Wren (the late)

A bequest, under the will of the late Mr T. L. Wren, Reader in Geometry, 1919-54, of £1,000, to be used for the benefit of staff and students of the College, together with his mathematics books.

BENEFACTIONS AND DONATIONS TO THE LIBRARY

Mr Hugh Clout

A gift of 75 books on geography and related topics.

Dr Alex Comfort

A further gift of 70 volumes, of which most are of post-1940 poetry, many of them rare and inscribed by their authors.

Faber and Faber Limited and the Society of Authors

A gift of some 250 volumes and periodicals to form a nucleus of basic material for the James Joyce Centre.

The Friends of University College and Mrs Muriel Eckert

The gift of £143 to purchase three letters by William Wilberforce to Jeremy Bentham. £100 of this sum was left to the Friends by Professor A. B. C. Cobban in his Will, and his widow, now Mrs Muriel Eckert, most kindly donated the additional £43 so that these letters would be associated with the memory of Professor Cobban.

Mrs H. S. Hacker and Emeritus Professor E. S. Pearson

The gift of the correspondence and papers of their father, Karl Pearson (1857-1936), Goldsmid Professor of Applied Mathematics and Mechanics, 1884-1911 and Galton Professor of Eugenics, 1911-1933. From Mrs H. S. Hacker the gift of Karl Pearson's personal library of 370 volumes; many of them inscribed or annotated, and from Professor E. S. Pearson that part of his father's library which had been housed in the Galton Laboratory, some 150 volumes in the history of science, mathematics and statistics.

Miss Winifred Myers

The gift, to mark the forty-fifth anniversary of her becoming a student at the School of Librarianship, of an album of letters addressed to Dr R. F. Weymouth, Headmaster of Mill Hill School, 1869-86.

Dr J. K. Shah

A further gift of 160 volumes on a wide range of subjects.

Dame Veronica Wedgwood

A gift of 50 historical works, mainly on the seventeenth century.

APPENDIX XIV

COLLEGE ACCOUNTS 1972–73

The Balance Sheet and the Income and Expenditure Account for the year will be found on pages 163-5.

BALANCE SHEET

LIABILITIES

The Capital Account increased by £68,481. This increase is mainly attributable to the purchase of 49–55 Grafton Way.

ASSETS

Freehold and Leasehold Land and Buildings increased by £159,660, reflecting the acquisition of 49–55 Grafton Way and the termination of the lease of 27–44 Cartwright Gardens.

TRUST FUNDS

The College holds endowments in the form of 208 separate trust funds with a total value of £1,706,900. The funds yield a total annual income of £87,000.

INCOME AND EXPENDITURE

The expenditure for the year exceeded income by £183,231 after charging £40,000 which was regarded as an allocation from the accumulated surplus. The adverse balance carried forward on the Income and Expenditure Account was £1,329 (£181,902 in hand in 1971–72).

Income exceeded that for 1971–72 by £1,005,152. Grants from the Court of the University increased by £1,059,674. Fees increased by £2,074. Grants for research were £67,544 lower than in the previous year. Selective Employment Tax (wholly recovered) decreased by £46,512.

Expenditure, including allocations to and from Reserves, was £1,282,695 more than in 1971–72. An additional £545,962 was spent on academic departments. Maintenance of Premises cost an additional £139,349, miscellaneous expenditure, including Selective Employment Tax, decreased by £28,260 net.

Income and expenditure under the main classifications in 1972–73 as compared with 1971–72 and with the corresponding year of the previous quinquennium, are shown in the following table.

EXPENDITURE	1967–68 £	%	1971–72 £	%	1972–73 £	%
Salaries and Pensions of Teaching Staff	2,044,597	36·0	3,055,868	34·5	3,442,553	34·0
Departmental Expenses, including Library	1,399,453	24·7	2,039,714	23·1	2,536,339	25·0
Research Grants ..	838,376	14·8	1,686,040	19·1	1,618,496	16·0
Maintenance of Premises.. ..	800,904	14·1	1,166,884	13·2	1,374,004	13·6
Administration ..	327,544	5·8	551,275	6·2	633,872	6·2
Selective Employment Tax	117,021	2·1	135,638	1·5	89,126	0·9
Other	142,414	2·5	213,326	2·4	437,050	4·3
	£5,670,309	100·0	£8,848,745	100·0	£10,131,440	100·0
INCOME						
Endowments ..	79,776	1·4	99,917	1·1	91,591	0·9
Grants	4,179,392	72·2	6,253,298	69·9	7,312,972	73·5
Donations	80,321	1·4	202,992	2·3	244,575	2·5
Fees	352,270	6·1	450,578	5·0	452,652	4·5
Grants for Research	838,376	14·5	1,686,040	18·9	1,618,496	16·3
Research Training Support Grants..	42,880	0·7	44,763	0·5	45,962	0·5
Selective Employment Tax	117,021	2·0	135,638	1·5	89,126	0·9
Other	99,157	1·7	69,831	0·8	92,835	0·9
	£5,789,193	100·0	£8,943,057	100·0	£9,948,209	100·0

EXTRA-BUDGETARY ACTIVITIES

The College administers the finances of many research projects supported from outside sources. 468 were being pursued actively at 31 July 1973. Income and expenditure decreased from £1,686,040 in 1971–72 to £1,618,496 in 1972–73.

CAPITAL GRANTS

Capital grants made during the year 1972–73 were as follows:	£
Internal Adaptations: Staff Refectory and Common Room	
Furniture	1,453
Professional fees	1,989
Alterations to Main Building Library: Professional fees	150
Conversion of Weldon Theatre for teaching purposes: Professional fees	3,485
Health Centre Furniture	13,059
Alterations in Old Chemistry Building: Professional fees	15,336
U C R F—Feasibility Study: Professional fees	2,800
Alterations to Refectory: Professional fees	9,727
Wates House: Professional fees	8,786
Installation of alarm panel in Main Lodge: Building work ..	9,937

Alterations to New Engineering Building: Building work	3,187
Purchase of 49–55 Grafton Way, WC1	28,000
Subsidy in aid of loan financed residence scheme: 49–55 Grafton Way, WC1	40,000
Provision of external means of escape to Old Chemistry Building: Building work	1,985
	£139,894

SCHOLARSHIPS AND PRIZES

Expenditure amounted to £34,652. Awards were made as under:

	Undergraduate	*Postgraduate*
	£	£
From Endowments	6,079	5,547
„ Donations	—	17,235
„ General Income	3,131	2,660
	£ 9,210	£25,442

UNIVERSITY COLLEGE LONDON
BALANCE SHEET AS AT 31 JULY 1973

31-7-72 £			£
15,331,078	CAPITAL ACCOUNT		15,399,559
28,748	REDEMPTION FUND		30,474
48,198	LOANS		46,472
15,408,024			15,476,505
1,586,523	RESERVES AND AMOUNTS SET ASIDE	1,978,790	
766,930	EARMARKED FUNDS	869,414	
		2,848,204	
	Less: Provision for Diminution in Value of Investments	121,638	
			2,726,566
628,020	CURRENT LIABILITIES		962,852
18,389,497			19,165,923
1,587,401	TRUST FUNDS		1,706,900
£19,976,898			£20,872,823

NOTES

Freehold and Leasehold Land and Buildings

(*a*) Freehold and leasehold land and buildings as stated in the accounts does not include fixtures, furniture and equipment. The cost of these assets is written out of the accounts on purchase or on completion of a Project against the corresponding grants or other monies received which are not therefore included in Capital Account.

(*b*) Freehold land and buildings are stated at valuation made in 1959 on the basis of the then current land values and building costs; additions since are stated at cost or valuation, as estimated by the College authorities.

(*c*) There are commitments for future expenditure on capital projects which amount to £980,000 at 31 July 1973.

31-7-72 £			£
15,112,670	FREEHOLD LAND AND BUILDINGS—See Note below		15,284,530
402,307	LEASEHOLD LAND AND BUILDINGS		390,107
15,514,977			15,674,637
85,485	CAPITAL AND OTHER WORKS IN PROGRESS *less* capital receipts		67,072
762,402	INVESTMENTS AT COST	1,138,151	
—	*Less:* Provision for Diminution in Value .. .. (*Market Value at 31 July 1973, £1,016,513; 31 July, 1972, £830,384*)	121,638	1,016,513
1,004,718	EXPENDITURE RECOVERABLE FROM FUTURE GRANTS		905,272
1,021,915	CURRENT ASSETS		1,502,429
18,389,497			19,165,923
1,587,401	TRUST FUNDS		1,706,900
£19,976,898			£20,872,823

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31 JULY 1973

EXPENDITURE

1971-72 £		£	£
	Administration		
429,688	Salaries	490,044	
101,114	Advertising, Printing, Stationery, Postage and Telephone	112,172	
20,473	Other Expenses (including Professional Fees)	21,656	
(551,275)			623,872
	Academic Departments		
2,999,329	Salaries of Teaching Staff	3,370,644	
	Departmental Wages:		
964,498	Technical Staff	1,120,251	
236,060	Secretarial Staff	275,905	
525,863	Departmental and Laboratory Maintenance	571,444	
1,686,040	Research Expenditure covered by grants on Research Contracts (contra opposite)	1,618,496	
4,529	Other Expenditure	5,541	
(6,416,319)			6,962,281
	Academic Services		
	Libraries:		
	Salaries 171,175		
237,862	General Expenditure 124,030		
		295,205	
7,145	Central Photographic Service	8,228	
2,537	Audio Visual Aids	6,380	
5,772	Radiation Hazards	7,613	
—	Miscellaneous	2,574	
—	Small Group Teaching	3,125	
(253,316)			323,125
	Maintenance of Premises		
264,390	Rates	304,533	
17,622	Insurance	25,542	
	Rents and other payments for use of buildings:		
	Halls of Residence 37,906		
64,671	Other Buildings 72,590		
		110,496	
214,407	Heat, Light, Water and Power	257,138	
499,617	Repairs and Maintenance of Buildings including amounts set aside for long-term maintenance	484,469	
108,471	Wages of Porters and Attendants	124,266	
16,419	Other Expenses	18,502	
(1,185,597)			1,324,946
	General Educational		
1,007	Examinations	2,229	
35,006	Scholarships and Prizes	34,652	
1,396	Public Lectures	1,691	
4,500	Staff Attendance at Conferences	6,000	
26,656	Student Vacation Grants	37,163	
2,362	Miscellaneous	3,010	
(70,927)			84,745

INCOME

1971-72 £		£	£
	Endowments		
(99,917)	Income of Trust Funds appropriated for purposes specified by Trust against expenditure included opposite		91,591
	Donations and Subscriptions: Appropriated for:		
1,555	Libraries	1,586	
15,000	Scholarships and Bursaries	17,235	
122,172	Salaries and Superannuation	170,497	
64,265	Departmental and Laboratory Maintenance	55,257	
(202,992)			244,575
	Grants from University Court		
(5,502,865)	General		6,974,700
	Earmarked:		
237,113	Academic Salary Revision 1971 Scheme	—	
—	Clinical Salary Revision 1972 Scheme	505	
116,455	Former Research Councils	—	
264,390	Rates	304,533	
739	Hayter Committee	784	
84,000	Supplementary Maintenace Grant	—	
3,836	Parry	650	
32,900	Student Vacation Grants	31,800	
11,000	Small Group Teaching	—	
(750,433)			338,272
44,763	**Research Council Training Support Grants**		45,962
450,578	**Fees**		452,652
1,686,040	**Grants for Research**, including research contracts (contra opposite)		1,618,496
24,805	**Contributions for Services Rendered**		25,644
19,632	**College Properties**—Rents received		16,724
	Other Items		
14,400	Special Funds Appropriation	21,027	
5,221	Interest on Deposits	19,284	
5,773	Miscellaneous	10,156	
(25,394)			50,467
135,638	**Selective Employment Tax** (contra opposite)		89,126

	Student Facilities and Amenities		
54,000	Grant to Students Union	65,650	
11,388	Salaries: Wardens of Halls of Residence	3,382	
21,352	Student Health Service	32,595	
1,379	Students' Purposes Fund	2,298	
616	Crabb Robinson and Ealing Hall Funds	677	
5,500	Central Admissions Scheme	6,969	
2,516	Miscellaneous	2,456	
8,487	Careers Office	10,061	
5,315	Student Counsellor Service	6,292	
(110,553)			130,380
	Miscellaneous		
56,539	Staff Pensions	71,909	
2,569	Grants from Benevolent Funds	2,991	
5,906	Interest on Overdrafts, etc.	3,455	
12,711	Sundries	14,238	
2,416	Refectory: College Subvention	1,600	
135,638	Selective Employment Tax (contra opposite	89,126	
2,000	College Collection	6,200	
(217,779)			189,519
—	**Capital Expenditure met from Income**		25,430
			9,664,298
	Allocation to Reserves at 31 July 1973		
(25,000)	College Fund		40,000
(10,000)	Shenley Pavilion		—
	Revenue Grants:		
—	Administrative Staff Training	10,000	
107,998	Departmental and Laboratory Maintenance	304,623	
3,766	Academic Services	50,339	
498	Repairs and Maintenance of Building ..	39,581	
32,890	Minor Works	127,240	
8,731	Student Vacation Grants	7,367	
—	Development Programme: Relocation and Other Costs	45,000	
(153,883)			584,150
11,000	Small Group Teaching (earmarked funds		7,875
9,005,649			10,296,323
94,312	*Excess of Income over Expenditure for the Year*		—
£9,099,961			£10,296,323
—	**Excess of Expenditure over Income for the Year**, after making allocations (net) to reserves of £467,142		183,231
181,902	Balance 31 July 1973, carried to Reserve ..		[1,329]
£181,902			£181,902

	Allocations from Reserves at 1 August 1972		
	Revenue Grants:		
52,867	Departmental and Laboratory Maintenance	107,998	
4,874	Academic Services	3,766	
20,807	Repairs and Maintenance	498	
66,294	Petty Works	32,890	
2,487	Student Vacation Grants	8,731	
			153,883
9,575	Former Research Councils Grant ..		—
—	Small Group Teaching		11,000
9,099,961			10,113,092
—	**Excess of Expenditure over Income for the Year** after making allocations (net) to reserves of £467,142		183,231
£9,099,961			£10,296,323
87,590	Balance as at 1 August 1972		181,902
94,312	*Excess of Income over Expenditure for the year*		—
£181,902			£181,902

PRINTED BY TAYLOR & FRANCIS (PRINTERS) LTD., RANKINE ROAD, BASINGSTOKE

UNIVERSITY
COLLEGE
LONDON